

Highlights

MTE 2013
Award Winning Researchers
Research Highlights
Centres of Excellence
Books@UM



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*Photo of Kappaphycus
-IOES-*

Contents

Preface

- Deputy Vice-Chancellor 3
- Editor -UMRB

IPPP News

- MTE 2013 4
- Infra Lab Open Day 6
- 2013 Southeast Asia Author Workshop 7
- PRGS Talk
- Public talk on CERN, Particle Physics & Hut the Higgs Boson 8

Research Grant Info

9

Award Winning Researchers

- Best of The Best-MTE 2013 10
- Best Biotechnology Award- MTE 2013 12

Research Highlights

- Advanced Fundamental Research 13
- Sustainability Science 14
- Computation and Informatics (C+i) 16
- Humanities & Ethics 18
- Advanced Engineering & Technology 20
- Health & Translational Medicine 22
- Biotechnology & Bioproduct 24
- Social & Behavioural Science 26

Research Personality

28

Centre of Excellence

- UMPEDAC 30
- IOES 31
- PRCUM 32
- MUSHROOM RESEARCH CENTRE 33

Research Output

- Publications 34

High Impact Research

36

International Research Collaboration

37

Books@UM

38

In the News

40

Facilities & Services

- Research Support Unit 41
- All about Publishing 42
- UM Innovation Incubators 46
- Central laboratory Facilities 47



DEPUTY VICE-CHANCELLOR

As we usher in the new year, a few things will begin to make themselves apparent. Some of you might have noticed that IPPP is changing in structure. This transformation will be completed, hopefully, by the end of the year. The formation of new units and new centres within IPPP is to strengthen its roles to face the myriad of new challenges facing us. On the same note, we would like to thank Prof. Dr. Mohd Rais bin Mustafa, Prof. Dr. Zulqarnain Bin Mohamed and Associate Prof Ling Teck Chaw for their very valuable contributions to UM research.

One notable change which will make itself apparent very soon will be the way we fund research in UM. The emphasis will be on multi-disciplinary research programmes (rather than small-sized single-discipline projects) focusing on key niche areas and directed to better serve the country and strengthen UM's research competencies. To aid the Cluster Deans and IPPP in planning which areas will receive funding for research, we will once again subscribe to SciVal Spotlight.

We are currently reviewing all our current policies (hiring of RAs, research funding, conference funds, WoS incentive rewards, authorship, page charge funding, commercialisation etc). The UM Research Ethics Committee has been approved and a new animal rights and bio safety policy are being drafted. All these are necessary for us to move forward in a more systematic manner and reinforce UM's position as the leader in research and innovation.

More will be revealed in the next bulletin.

Awg Bulgiba Awg Mahmud

EDITOR, UMRB

Welcome to the first 2013 UMRB issue where we continue to highlight and promote our excellent researchers in the recent innovative Exposition and some of the current research outputs of the Research Clusters, HICOE, COEs, HIR and the available research facilities and services at IPPP.

In this climate of academic excellence, we need to publish research in high impact journals and books and network with others. On this note, UM has maintain an impressive network of international Research Collaborations.

Since January 2013, the Research Development and Services Unit (UPPP) was upgraded to the Centre of Research Services (PPP) which comprises of the Research Support Unit (including Statistical Services and Training) and the Central Facility Unit. The restructuring was to consolidate our efforts to better serve UM community and to improve our productivity in research and Innovative Expositions.

I thank all the contributors and the members of the editorial team for their inputs and assistance. I welcome suggestions to improve our UMRB as a snapshots to our current research activities.

Thank you.

Thong Kwai Lin



MTE 2013 | 21- 23 Feb 2013 | PWTC



UM won 8 Gold, 2 Silver, 1 Bronze and 2 Special Awards at the Malaysia Technology Expo (MTE) 2013 held at the Putra World Trade Centre from 21st to 23rd February.

UM also won:
"Most Innovative Booth"

Win: UM researchers with their medals



Colours of MTE 2013



Judging day: UM researchers explaining their inventions to the Judges

RESULTS FROM MTE 2013

Researcher(s)	Project Title	Faculty	Award
DR. AHMAD SAIFIZUL ABDULLAH (PI) Prof. Ir. Mohamed Rehan Karim Airul Sharizli Abdullah	Portable And Automated Traffic Classifier	Center For Transportation Research, Faculty of Engineering	1)Best of the Best Award 2) GOLD
DR. ISHENNY MOHD NOOR(PI) Dr. Badrul M. Jan, Dr. Brahim Si Ali, Dr. Masitah Hasan, Prof. K.B. Ramachandran, Prof. Dr. Nik Meriam Nik Sulaiman, Prof. Ir. Dr. Mohd Azlan Hussain, Dr. Zahra Jeirani.	Method for Lipase Production from Palm Oil	Chemical Engineering Department, Faculty of Engineering	1) Best Biotechnology Award 2) GOLD
PROF DR. JAFFAR ALI BIN. M. ABDULLAH (PI)	Synthetic Protein-Free Embryo Culture Medium: Elimination of Disease Transmission During Infertility Treatment	Department of Obstetrics and Gynaecology, Faculty of Medicine	GOLD
DR. CHONG WEN TONG (PI) Prof. Dr. Masjuki Bin Haji Hassan Prof. Ir. Dr. Hew Wooi Ping Dr. Ang Bee Chin Mr. Poh Sin Chew Mr. Ahmad Fazlizan Bin Abdullah Mr. Mohamad Reza Hassan Ms. Yip Sook Yee	Eco-Greenery Outdoor Lighting System	Department of Mechanical Engineering, Faculty of Engineering	GOLD
ASSOC. PROF.DR CHUA YAN PIAW (PI)	The Creativity Game	Insitut of Educational Leadership	GOLD
DR. AHMED ALYDIAA MOHAMMED SARHAN (PI) Prof. Dr. Mohd Hamdi Abd Shukor, Mohd Sayuti Bin Ab Karim.	An Inorganic Nano Base Lubrication System To Be Used In Heavy Duty Industrial Machining	AMMP Research Centre, Department of Engineering Design And Manufacture, Faculty of Engineering	GOLD
DR. CHING YERN CHEE (PI) Assoc. Prof Dr. Iskandar Yaacob Idris, Dr. Nor Hafizah Binti Ramli,	AgIR Coating Lacquer: An effective FIR Absorber and UV Blocker for Agricultural Greenhouse Film	Department of Mechanical Engineering, Faculty of Engineering	GOLD
PROF. DR. MOHD ALI HASHIM (PI) Eng. Adeeb Hayyan Dr. Maan Hayyan Dr. Farouq S. Mjalli Dr. Inas M. Alnashef	Green Catalysts for Generation of Multiple Products from Low Grade Palm Oil	Department of Chemical Engineering Faculty of Engineering	GOLD
PROF DR WONG CHIEW SAN (PI) Mr. Jasbir Singh	Pulsed Plasma X-Ray Source	Plasma Technology Research Centre, Physics Department, Faculty of Science	SILVER
PROF DR MISNI MISRAN (PI) Teo Yin Yin, Vicit Rizal Eh Suk.	Stealth Fatty Acid Nanoliposome	Colloid Laboratory Chemistry Department, Faculty of Science	SILVER
PROF MOHD ZAMIN JUMAAT (PI) Dr Nor Hafizah Ramli Sulong, Newsha Abdollahi Chahkand.	Innovative method of strengthening steel beam in torsion	Department of Civil Engineering Faculty of Engineering	BRONZE

Infra Lab Open Day | 28 Feb 2013 | RMIC



Opening: IPPP's Director officiated the Infra Lab Open Day



Infra lab Open Day was organised by the Centre of Research Services (PPP) to introduce the laboratory facilities available in the Central Facilities Unit in IPPP. These facilities are available to all UM researchers.

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2013 Southeast Asia Author Workshop | 5 March 2013 | RMIC



This workshop was organised by Research Support Unit in collaboration with Springer & Edanz



PRGS Talk | 11 March 2013 | RMIC

PRGS Talk was organised to help UM researchers in writing research proposals for PRGS application.



Public Talk on CERN, Particle Physics & the Hunt for the Higgs Boson | 28 March 2013 | RMIC



Talk By Professor
Emmanuel
Tsesmelis
Senior Physicist,
Head of CERN
Directorate Office
Visiting Professor,
Department of
Physics, University
of Oxford



Visitors from Shenzhen Graduate School of Peking University, China | 28 March 2013 | RMIC



They came to seek possible
collaboration in research with UM.

Schedule For Research Grants From Ministry of Science, Technology and Innovation (MOSTI)-**SCIENCEFUND**

CYCLE	1/2013	2/2013	3/2013	4/2013
Submission deadline by Researchers (ONLINE)	15 Feb 2013	30 April 2013	15 July 2013	29 Nov 2013
Deadline (MOSTI)	18 March 2013	31 May 2013	31 August 2013	31 Dec 2013
Date of Application Assessment by MOSTI	19 March -29 May 2013	3 Jun 2013-13 August 2013	2 Sept -13 Nov 2013	2 Jan-14 March 2014
Date of Application Result by MOSTI	30 May 2013	14 August 2013	14 Nov 2013	17 March 2014

Schedule For Research Grants From The Ministry Of Higher Education — **FRGS, LRGS, ERGS, PRGS**

GRANT	OPENING	DEADLINE (UM)	DEADLINE (MOHE)
LRGS	1 OCT 2012	25 OCT 2012	19 NOV 2012
FRGS	20 DEC 2012 1 MAY 2013	22 JAN 2013 MAY 2013	20 FEB 2013
ERGS	18 JAN 2013	20 FEB 2013	19 MARCH 2013
PRGS	18 FEB 2013	15 MARCH 2013	18 APRIL 2013

Source-PPGP

MTE 2013 Best Of The Best Award Winner — Portable and Automated Traffic Classifier

MTE 2013 was a historic event for Dr. Ahmad Saifizul Abdullah and his team when they won the **Gold Medal** and the **Best Of The Best Award** through the invention- Portable and Automated Traffic Classifier.

Dr. Ahmad Saifizul Abdullah is currently a senior lecturer at the Mechanical Engineering Department, University of Malaya specializing in instrumentation and control engineering. He is also a member of the Center for Transportation Research (CTR) at the Faculty of Engineering of University of Malaya (UM). Since joining UM he has been active in research into various areas of instrumentation and control with particular emphasis on Intelligent Transport System (ITS) and sustainable transport. He has published and presented more than 30 papers in journals and proceedings, actively working as a consultant to various government agencies and private companies, and he has won more than 20 awards locally and internationally. He has been appointed a Director of a UM spin-off company called Integrated Transportation Solutions Sdn Bhd which was established to manufacture and market various CTR's R&D outputs related to intelligent system for capturing comprehensive, continuous and reliable traffic and vehicular data.



Dr. Ahmad Saifizul received The Best of The Best Award-MTE 2013

Traffic data is a necessity and a mandatory input in transport planning, traffic impact assessment and any planning and design of transport facilities and road networks. It is also a mandatory input for the carrying out of traffic impact studies for any new land use development such as residential, commercial, mixed development areas and townships. Traffic data is also a mandatory input for justifying funds for road network upgrading or expansion. The need to obtain accurate and comprehensive traffic data is certainly overwhelming. This requires reliable techniques and methods of traffic data collection in order to ensure that accurate and reliable data is captured for further analysis. Several methods of traffic data collection is currently being utilised ranging from manual techniques to using mechanical devices and image processing techniques. Despite having a variety of techniques and methods, there is still much more to be done in terms of getting reliable and accurate traffic data.

Innovative Solution

The RealCount™ Automated Traffic Classifier (RealCount™ ATC), as shown in Fig 1, is a portable and automated traffic counter capable of providing comprehensive traffic and vehicular data automatically and continuously, providing an innovative solution to data collection for traffic study.

With a patented array of road sensors, RealCount™ ATC is the only automated traffic classifier that can provide individual vehicular data and traffic data without any estimation. It is classified under intrusive multiple technology detectors as the road sensors are taped on the road surface using a special road tape for quick installation with minimum to no damage to the road (Fig 2). With this configuration, the system is capable of isolating each vehicle within a traffic platoon and can classify the vehicles according to number of axles and wheelbase.



Fig 1. RealCount™ Automated Traffic Classifier console

Challenges

The RealCount™ ATC system is an outcome of a two years R&D program undertaken at the Center for Transportation Research (CTR), University of Malaya with financial assistance from Ministry of Higher Education under the Prototype Research Grant Scheme (PR005-2011A). The development has gone through several processes from preliminary design, hardware and software development and improvement, functional testing and product enhancement for commercial purposes as shown in Fig 3.



Fig 2. RealCount™ ATC installed on the road



Fig 3. RealCount™ ATC development process

The real challenge is to transform the idea into a physical prototype that functions according to the required specification and is ready for commercialization. It is really challenging and time-consuming because this product requires field trials to be carried out on the road every time updates and improvements are made. This requires permission from the authorities, road closures and traffic management.

Features and Specifications

RealCount™ ATC is equipped with a memory that can collect up to 300,000 data and operating on a 12V battery pack, the device is designed to last up to 5 days of continuous data collection for a road capacity of 2500 vehicles per hour. At any convenient time, data collected can be transferred to a computer through a USB connection. The RealCount™ Datalogger software uploads the data recorded from the device and data can be exported to Microsoft Excel® for further analysis.

Applications

RealCount™ ATC is developed to provide individual vehicular data and traffic data without any estimation as illustrated in Table 1.

Table 1: Parameters collected by RealCount™ ATC

Parameters	
Vehicular	Traffic
Wheelbase (m)	Headway (s)
Number of axles	Total axle count
Speed (km/h)	Total traffic volume
Vehicle Type	Classified traffic volume

The advantage of RealCount™ Automated Traffic Classifier is the ability to capture continuous data throughout the day (and not through sampling which can be bias) which can demonstrate the variation of traffic parameters with time throughout the day. Its distinct capability to classify passing vehicle in real time also makes it possible to proportion the different vehicle types in traffic stream, and its hourly variation during a typical weekday.

With accurate, reliable, comprehensive and continuous traffic and vehicular data all year round, not only the road investment planning and maintenance management system could be enhanced, the number of accidents and fatalities on our roads could also be effectively reduced.

Inventors

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Mr. Airul Sharizli Abdullah

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MTE 2013 Best Biotechnology Award Winner – Method for Lipase Production from Palm Oil

MTE 2013 was a historic event for Dr. Ishenny Mohd Noor and his team when they won the **Best Biotechnology Award** and **Gold medal** through the invention- **Method for Lipase Production from Palm Oil**.

Dr. Ishenny, who took 14 years to complete the research, describes his invention in enzyme technology as an extra-ordinary biocatalyst to synthesis or to transform chemical organic compound to other organic compound as a product. The enzymatic reaction produces product of high purity with less waste under mild conditions i.e. low temperature and pressure.

Polipazyme™ is a novel lipase enzyme derived from palm oil using fermentation process. It is very powerful in converting waste water from palm oil mill also known as POME, to Biopro Diesel fuel, fertilizer and clean water. Lipase production technology from palm oil using microbe by fermentation has been patented (**PI 2012700014**) under University of Malaya.

Polipazyme™ is the key catalyst to produce Biopro Diesel Fuel™. The technology of Biopro Diesel can also be applied to any other wastewater from any edible oil industries such as soya oil, corn oil, castor oil, rapeseed oil, sun flower oil, etc. This technology is one of the best solutions, for waste water treatment with zero waste (effluent discharge). Biopro Diesel is also a green fuel and environmental benign. The properties of Biopro Diesel is shown in Table 1.

Gyrus Tech Sdn Bhd (No. 1082839-D), a spinoff company under University of Malaya, was set up by his team. This company is responsible for the design and fabrication of Biopro Diesel Plant with a minimum capacity of 20 tons per day. It provides appropriate training for engineers and operators for the Biopro Diesel plant and services and maintenance of the plant machineries. Gyrus Tech is also in the process of converting an existing Biodiesel Pilot Plant into Biopro Diesel Pilot Plant. It has received about RM750,000.00 loan from UM for the modification work. The modification will enable Gyrus Tech to produce sufficient amount of Biopro Diesel to run UM buses. The renovated pilot plant is expected to have a minimum production capacity of 1,000 L per day. The fact of Biopro Diesel Fuel shown in the table 1.

In addition his team also received a Gold medal at ITEX 2012 at KLCC Kuala Lumpur and Gold medal Award from IENA, Nuremberg, Germany. His team has published 12 ISI publications from 2011-2013.

Table 1.

Properties	Biopro Diesel	Current Diesel	Euro 2M DS	Euro 4M DS
Ash, wt %	0.01	0.01	0.01	0.01 max
Pour point, oC	10	15	15	15 max
Flash point, oC	63	60	60	60
Kinematic viscosity @ 40oC	5	1.6 - 5.8	1.6 - 5.8	1.6 - 5.8
Copper corrosion	0	1	1	1 max
Water by distillation, vol%	0.02	0.05	0.05	0.05
Sediment by extraction, wt%	0	0.01	0.01	0.01 max
Micro carbon residue, wt%	0	0.1	0.1	0.1 max
Density, Kg/L	0.861	to be	To be reported	Tobe reported
Total acid number, mg KOH/g	0.15	0.25	0.25	0.25 max
Cetane Number	56	45	49	51
Total distillation	350	0	370	360
Total sulfur, ppm	0	3000	500	50

Data from Biofuel Laboratory Chemical Engineering Department University of Malaya, 27/12/2012



Inventors

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Bio-innovated Green Polymer Electrolytes in Electrochemical Applications

By

Associate Prof. Dr Ramesh T. Subramaniam

In **electrochemical** applications the issue on the formation of dendrites always question the safety of the fabrications containing liquid electrolyte. This limitation was overcome upon the use of carbohydrate polymer for the entrapment of liquid electrolyte. The utilization of carbohydrate based polymer electrolytes inhibits the flow of the dendrites from reaching another side of active electrode materials via closing up the holes in the separator that creates the pathways for the dendrites flow. Therefore, the safety of the electrochemical fabrications can be improved upon utilization of carbohydrate based polymer electrolytes material. The utilization of carbohydrate based materials is also a convincing way of reducing the massive overloaded waste in the environment owing to the biodegradability of the natural polymer.

The entrapment of liquid electrolyte within the carbohydrate polymer matrix occurs upon the presence of hydrophilic groups on the polymer backbone chain. Through the liquid electrolyte entrapment the highly ordered arrangements of the polymer chains in the matrix will be diffused to amorphous state upon weakening of the intermolecular bonding that connects the atoms together. This bond weakening effect induces disruption in the crystalline structure which then improves the conducting nature of the sample. The doping of ionic additives such as ionic liquid, ionic mixture, plasticizers etc. also enhance the conductivity properties of the developed membranes.

A few years ago, Dr Ramesh and his team initiated an effort to incorporate a more cost-effective material, such as deep eutectic solvent (DES) into carbohydrate based electrolytes to improve its property. This effort in establishing a more cost effective material to replace the use of ionic liquid led to many ISI publication and the innovation has received many international awards. The research finding has great impact in the electrochemical industry. The invention are reported to have a very promising capability in supporting the electrochemical devices such as batteries, super capacitors, fuel cells etc.

The wide adoption of his inventions in various types of electrochemical applications, upon further fine-tuning, would open more doors to commercialization in an environmentally conscious society.

Related awards:

- Young Scientist of "Global Young Academy (GYA)" 2013
- IAP Young Scientist 2012
- IUPAC Young Scientist Award 2011

Related publications:

- S. Ramesh, R. Shanti, Ezra Morris, "Characterization of conducting cellulose acetate based polymer electrolytes doped with "green" ionic mixture" Carbohydrate Polymers 91 (2013) 14-21.
- S. Ramesh, R. Shanti, Ezra Morris, "Exerted influence of deep eutectic solvent concentration in the room temperature ionic conductivity and thermal behavior of corn starch based polymer electrolytes", Journal of Molecular Liquids 166 (2012) 40-43.
- S. Ramesh, R. Shanti, Ezra Morris, "Studies on the thermal behavior of CS: LiTFSI: [Amim] Cl polymer electrolytes exerted by different [Amim] Cl content", Solid State Sciences 14 (2012) 182-186.
- S. Ramesh, R. Shanti, Ezra Morris, "Plasticizing effect of 1-allyl-3-methylimidazolium chloride in cellulose acetate based polymer electrolytes", Carbohydrate Polymers 87 (2012) 2624-2629.
- S. Ramesh, R. Shanti, Ezra Morris, "Discussion on the influence of DES content in CA-based polymer electrolytes", Journal of Materials Science 47 (2012) 1787-1793.
- S. Ramesh, R. Shanti, Ezra Morris, "Studies on the plasticization efficiency of deep eutectic solvent in suppressing the crystallinity of corn starch based polymer electrolytes", Carbohydrate Polymers 87 (2012) 701-706.

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APPLICATION OF DIGITAL IMAGE RECOGNITION METHODS WITH SEMANTIC ANNOTATIONS FOR SPECIES IDENTIFICATION

By
Sarinder Kaur Dhillon

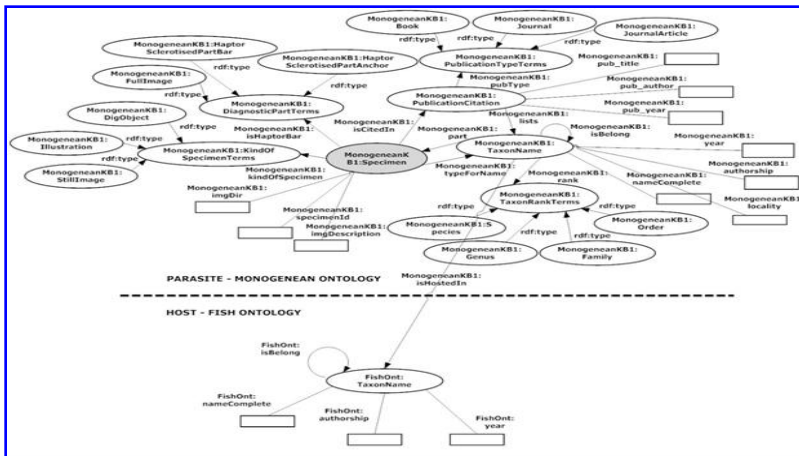
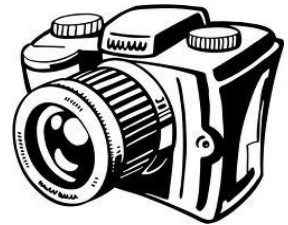


Fig 1. Monogenean Haptor Bar Image and Fish Ontologies.

With the growing trends in bioinformatics, most biological processes are simulated to run on automated platforms using high throughput computing power. Moreover, in the era of big data and cloud computing, managing large amount of data is no longer a chore. In the field of Biology where huge data sets are generated through field work and experimental studies, it is timely to manage and analyze these data using the powerful computing technology. In biology, images are needed for organism identification, teaching and educational purposes. For example in taxonomy, researchers collect huge number of specimens which are then converted into digital images in the form of photographs or illustrations. From these images, objects such as diagnostic hard parts can be used to identify the organism at any level such as genus or species. Additionally, biologists also describe the collected specimens which are often ignored when building image databases.

Currently, there are many online databases but image and textual databases exists independently. Due to this, a user often has to switch between distinct systems before the extracted information can be combined.

In our research, we consider both image and text data sets in automating species identification. As for images we apply pattern recognition techniques based on shapes of the objects whereas the textual description is captured in the form of semantic annotations. Semantics is used to express the intentional meaning of the things and the information captured in this form can be queried based on the human perception. A semantic data model includes meaning in building a database and this facilitates building distributed databases that enable applications to interpret the meaning from the content.

Related Awards

Silver Award - BIO Innovation Awards 2009, BioMalaysia 2009, 17th November 2009, Kuala Lumpur Convention Centre.A Content Based Image Retrieval (CBIR) for Monogenean Taxonomy An Approach using Data Mining. Arpah A., Sarinder K. K. S., and L. H. S. Lim

This is important as we plan to build distributed databases on a variety of living and non-living organisms and all the semantics databases can be integrated when they use the same relation types or standards. In general they have a wider applicability than relational or object oriented databases.

We have begun digitizing known Malaysian parasite species in particular the monogeneans and fish into databases which can be analysed for information. Monogeneans are parasitic flatworms (Platyhelminthes). They live on skin or gills of fish, and have simple life cycles. In scientific classification, monogeneans are in the kingdom Animalia, phylum Platyhelminthes, class Monogenea. As a prototype, we build a preliminary Monogenean Image Haptor Bar Ontology (MHBI) which is integrated with the Fish Ontology (Fig 1). We used these ontologies along with the region based information of the shapes of the haptor bars to build a Content Based Image Retrieval System for Monogeneans (Fig 2). Besides working with the information within the database we have also to enrich our database with more data and we are concurrently populating our databases with existing and new data.

In this interdisciplinary research, we strongly believe that species identification which is currently dependent on expertise of a few individuals can be automated using technologies in pattern recognition and semantics for both image and text retrieval. We also aim to focus on our two most crucial research questions which are: (1) to what extent an automated system can help in returning an accurate species identification?; (2) whether morphologically similar species can be distinguished in an automated fashion with sufficient accuracy? With these findings, we aim to build high throughput automated systems capable of accurate species identifications in seconds. This system can then be used as a benchmark for identifications of hundreds of other living and non-living specimens.

Related Publications:

- Arpah A., L.H.S. Lim., Amandeep S. Sidhu, Sarinder K. Dhillon, Biodiversity Image Retrieval Framework for Monogeneans, Systematic and Biodiversity. (in press)
- Arpah, A., L.H.S. Lim, Amandeep S. Sidhu, Sarinder K.Dhillon, Semantic Representation of Monogenean Haptor Bar Image Annotation, BMC Bioinformatics. (in press)
- Sarinder, K. K. S., Lim, L. H. S., Merican, A.F., Dimyati, K. (2010). Biodiversity information retrieval across networked data sets. Aslib Proceedings: New Information Perspectives Vol. 62 No. 4/5, 2010 pp. 514-522 Emerald Group Publishing Limited.
- Sarinder KKS* & Lim LHS. 2012. Flagship Project on Biodiversity Information management in Malaysia current status and the way forward - an initiative by the University of Malaya. UM Researcher's Conference 2012
- Halijah Ibrahim, Sugumaran Manickam, Sarinder Kaur Kashmir Singh. 2012. The Botanical Collection and Research of University of Malaya-The Way Forward. Proceedings of APRU Research Symposium on University Museums: Forming a University Museum Collection Network as the Core Frontier Research. pp 31-33. (Non-ISI/Non-SCOPUS Cited Publication)
- Sarinder K.K.S., Majid. M. A., T.H Chua, Merican AF, Dimyati, K, Ibrahim H, Baljit K.K.S, and Lim L.H.S. (2010).
- Indigenous Distributed Relational Biodiversity Databases. Proceedings of the International Conference on Environmental Science and Technology (ICEST), Bangkok, Thailand, 23 April 2010, pp 503-508 (Non-ISI/Non-SCOPUS Cited Publication)
- Sarinder KKS, Lim LHS, Merican AF and Dimyati K. 2010.Information Retrieval from Distributed Relational Biodiversity Databases. Proceeding of 2010 International Conference on Computer Research and Development (ICCRD 2010)

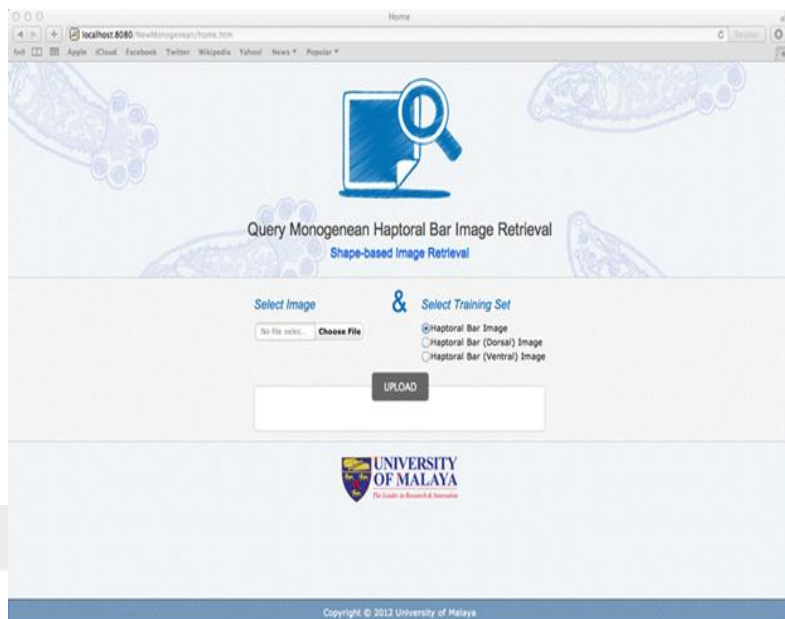


Fig 2: Monogenean Haptor Bar Image Retrieval System

- Alfred S., Arpah A., L. H. S. Lim, and Sarinder K. K. S. Semantic technology: An efficient approach to Monogenean information retrieval. Proceeding of International Conference on Computer and Network Technology. 23- 24 April 2010. Bangkok, Thailand. 478-481, Bangkok, Thailand, The Institute of Electrical and Electronics Engineers. doi:10.1109/ICCNT.2010.127
- Arpah A., Sarinder K. K. S. and L. H. S. Lim, 2010. A Database Management System (DBMS) for Monogenean Taxonomy. Proceedings of 2010 International Conference on Environmental Science and Technology. In Saji Baby & Parvinder Singh Sandhu (Eds.) (2010), 23- 24 April 2010. Bangkok, Thailand. 261-265, Research Publishing Services. doi:10.3850/978-981-08-5716-5_T103
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- Arpah, A., Alfred, S., Lim, L. H. S., and Sarinder K. K. S. (2010). Monogenean Image Data Mining using Taxonomy Ontology. Proceedings of 2010 International Conference on Networking and Information Technology (ICNIT 2010). In S. Thatcher & X. Yi (Eds.) (2010), 11- 12 June 2010. 478-481, Manila, Philippines, The Institute of Electrical and Electronics Engineers. doi:10.1109/ICNIT.2010.5508467

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INTELLIGENT FORENSIC SYSTEM

By

Assoc. Prof. Datin Dr. Sameem Abdul Kareem

Forensic science (often shortened to forensics) is an inter-disciplinary area involving Law, Medicine, Philosophy, Police Work and Science to answer questions of interest to a legal system. This may be in relation to a crime or a civil action. The aim of forensics is to convert the initial suspicion into a reasonable certainty of guilt or innocence that may stand in the court of Law.

In recent years, mathematical, statistical and computer science methods have found extensive application in developing new procedures for crime investigation, prosecution and the enforcement of law. Computer-based methods have also become important tools for performing forensic functions. Pattern recognition and other computational methods can reduce the bias inherent in traditional criminal forensics. Yet, knowledge and intuition of the human expert plays a central role. Computational Forensics is an emerging research area involving computer-based modeling, computer simulation and analysis, recognition and solving of problems in various forensic disciplines. It is a quantitative approach to the methodology of forensic sciences using algorithmic and software methods. The ultimate goal of computational forensics is the discovery and advancement of forensic knowledge.

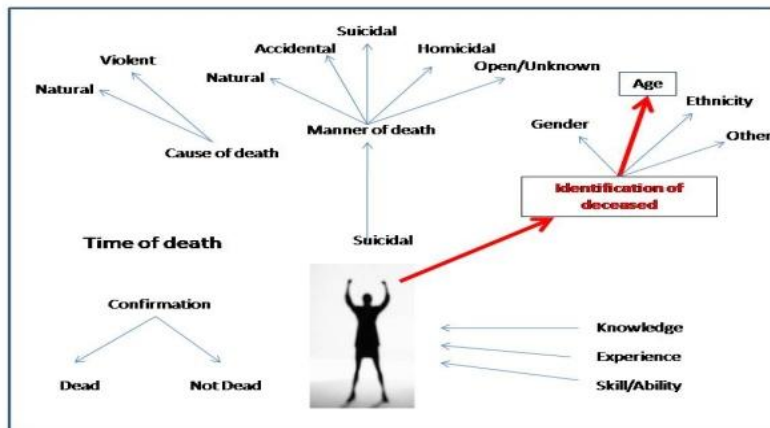


Fig. 1 Mind Map of a Forensic Expert

Normally, forensic experts attempt to reconstruct the events, which have taken place at a crime scene by careful examination or observation and assembly of known facts and by applying their expertise as shown in Fig. 1.

The pathologist also needs to determine when a person died. The time of death can be determined by various factors such as body temperature and stiffness of the corpse (Rigor Mortis), softening of the eyes, skin colour due to bacteria growth and the visibility of vein, hypostasis or blood pooling which changes the colour of the skin, the contents of the digestive system and gut.

An intelligent forensic system (IFS) is an attempt to use computational methods to capture the mind processes of a forensic expert in order to perform a guided e-forensic diagnosis as shown in Fig. 2 and 3.

The advantage of such a system is manifold, as it would enable investigators to assess large databases efficiently and rapidly. The main challenge facing the law-enforcement and intelligence-gathering environment is accurately and efficiently analyzing the huge volumes of data. A computer has the capability to process thousands of transactions in seconds, saving time and manpower. Computers are also less prone to errors than humans. The Bone Age Assessment (BAA) system is a first step towards developing the IFS (refer to Fig. 3). BAA plays a significant role in forensics to evaluate the growth status of children and to detect the hormonal problems and genetics disorders.

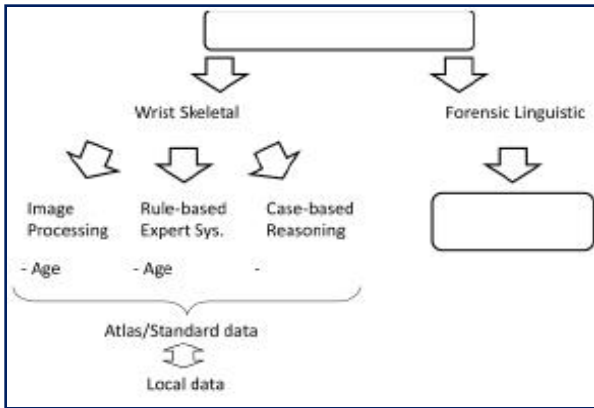


Fig. 2 Blueprint of an Intelligent Forensic System

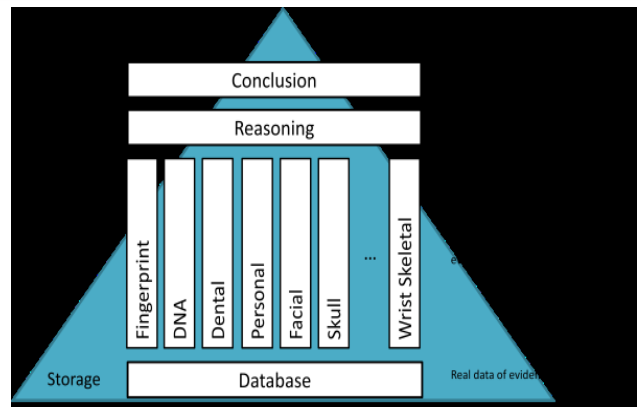


Fig. 3 Conceptual View of Intelligent Forensic System

Determination of bone age based on radiological evidence, X-rays, or bone age assessment (BAA) is a useful but time consuming process. Currently, there is no preferred or standard method for BAA in clinical practice. Most of the current techniques and methods used for BAA utilize segmentation of specific regions of hand and wrist X-ray images resulting in low accuracy rates due to the limitations of image processing.

An important feature of the system overcomes the problem of segmentation of specific regions of the hand-wrist bones by using histograms. The next phase of the research is in the use of Case-Based Reasoning (CBR) in order to determine the cause of death. The CBR system also utilizes a dictionary and ontology to extract information from autopsy reports for decision making purpose. By using an uncertainty detection method (a part of Natural Language Processing (NLP)), the system is also capable of classifying the report's uncertainty or validity. The proposed reasoning tool with the capability of classifying uncertain words/phrases is necessary (incase of lack of evidence) when in doubt in performing judgment.

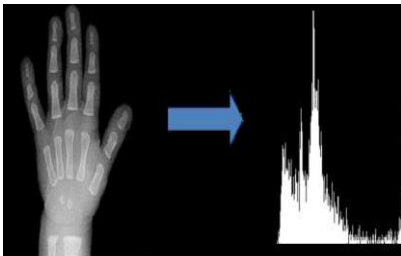


Fig. 4 Bone Age Assessment System

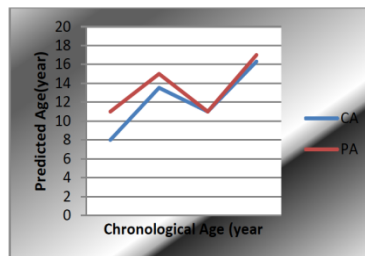


Fig. 5 Comparison between the predicted and chronological age of Asian

Related Awards

Bronze medal in ITEX 2012
Automated Web Based System for Bone

Related Publications :

•Marjan Mansourvar, Ram Gopal Raj, Maizatul Akmar Ismail, S. Abdul-Kareem, Saravanan Shanmugam, Shahrom Wahid, Rohana Mahmud, Rukaini Abdullah , Fariza Hanum Nasaruddin, Norisma Idris, Automated Web Based System for Bone Age Assessment using Histogram Technique, pp 107-121, Malaysian Journal of Computer Science, Volume 25, No 3, 2012.

•Marjan Mansourvar, Ram Gopal Raj, Maizatul Akmar Ismail, Sameem Abdul Kareem, Rohana Mahmud, Rukaini Hj. Ahmad, Fariza Hanum Nasrudin, Norisma Idris , Development of A Computer-based System To Support Intelligent forensic study, International Conference on Computational Intelligence, Modeling and Simulation (CIMSIM 2102) Kuantan, Malaysia. September 2012.

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DIALOGUE PRACTICES IN MALAYSIA AND ITS IMPACT ON THE 1MALAYSIA CONCEPT: CASE STUDY OF STUDENTS AT THE UNIVERSITY OF MALAYA

By,
Mohammad Amiriskandar Abdul Rahim
Chang Lee Wei

Traditional societies have undergone many great changes and transformations in today's modern world. In the wake of these transformations, there is a critical need for acknowledging the diversity in cultures and beliefs, in values and backgrounds, and the fact that human society in the future will require a 'sound management' of these diversities. The adoption and implementation of dialogue is an important topic in sustaining peace and harmony within the society and nation. In general, the disunity and conflict around the world may be due to not just the integrity of individuals, but also the integrity of the leaders of civil society, involving all sectors including economic, politic, social, religion and science and technology. Indeed, the world community cannot avoid recognizing the differences in biological, demographic and geographic diversity of individuals, but these issues should be carefully managed. Serious attention to differences and diversity is also necessary even in smaller communities. Therefore, the way to reduce misunderstanding and achieve mutual understanding is through dialogue, which is identified as the most effective way.

Currently Malaysia is known as a modern and progressive country in Southeast Asia. Malaysia is a multi-ethnic society made up of diverse races, religions and languages amongst its 28 million people. One of the distinctive features of Malaysia is it having such a great diversity of people, wonderful cultures and historical backgrounds; and given its demographics, Malaysia is one of the most plural and heterogeneous countries in the world. Although the civil society in Malaysia has some common physical, mental and cultural characteristics, there are very important differences among the various ethnic groups, especially in culture, language and religion. The uniqueness and distinctiveness of Malaysia's history, multi-racial population, religions and languages are not only seen as assets, but have also become creative challenges in a pluralistic society.

In that spirit, the 1Malaysia concept was introduced by the current Prime Minister, Dato' Sri Mohd Najib bin Tun Haji Abdul Razak, with the aim of creating a more united, vibrant, productive and competitive Malaysia. The concept is built upon the foundations of Malaysia's Federal Constitution, various laws and policies, the Rukun Negara, Vision 2020, and the National Missions and is premised on Malaysians' own ideas, commitment, moral and aspirational values on unity and fairness. The output of this project will include providing information to the Department of National Unity (JPNIN) to encourage greater acceptance among the different segments of Malaysian society, thus strengthening national unity. The research will also assist the Ministry of Higher Education (MOHE) in enhancing the curricula contents of courses such as TITAS (*Tamadun Islam dan Tamadun Asia* / Islamic Civilization and Asian Civilization) in Institutes of Higher Education in Malaysia.

The objectives and expected output of this research project are to identify the level of understanding and the dialogue practices in Malaysia and its impacts on the 1Malaysia concept, while attempting to construct a theory of civilization dialogue from the Malaysian perspective that can act as an alternative theory to the Clash of Civilizations Theory by Samuel P. Huntington which then can be utilized to develop a module or framework that can be used by various sectors as a reference to strengthen their understanding of the role of dialogue and its importance to the 1Malaysia concept.

The methodology employed by this project is based on a mixture of qualitative and quantitative research methods whereby in the first stage of the project after delving and mapping out the theoretical and practical concepts of 1Malaysia and dialogue as applied throughout historical narratives and connotations, the researchers proceeded with the questionnaire by obtaining 60 students as respondents from various faculties in the University of Malaya. These respondents were comprised of an equal segment of the Malay, Chinese and Indian groups with 20 students from each group.

In the early analysis of the survey, the majority of the respondents gave a positive answer when asked about their understanding of the meaning of 1Malaysia (90%) and dialogue (65%), which also holds true in the acknowledgement of the importance of both concepts, with 60% and 55% each – although the percentages of the dialogue part are smaller than 1Malaysia in both cases.

However, when asked about their level of comfort when dealing with friends from different racial groups, the feedbacks were mixed as 85% of the respondents said they were comfortable dining with friends of other races and 70% replied with yes when visiting them but in an interesting outlook 75% responded with a negative answer when asked whether they are comfortable living with them, with 85% felt comfortable living with friends of the same race instead.

Even though there were some paradoxical responses between the questions of understanding and practice, the signs of establishing a positive future are encouraging as 65% of the respondents stated they noticed and/or were involved in the activities related to the concept of 1Malaysia.

In the coming weeks, this project will proceed with the next stage of visualizing and studying the data in a more detailed manner to fully understand the issues that are contained in the discussions of this research project by the means of in-depth focus group discussions with select respondents and interviews with relevant bodies of authority and scholars in the fields social studies and policy-making, before concluding with a thorough report. It is hoped that this research will give an interesting insight on the topic of dialogue practices in line with the 1Malaysia concept.

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Membrane Technology in Biodiesel Production

By

Prof. Dr. Mohamed Kheireddine Taeib Aroua

Biodiesel is a clean burning fuel derived from vegetable oils, animal fats or grease. The chemical structure of biodiesel is fatty acid methyl esters (FAME). FAME is receiving increasing attention as an environmental friendly and renewable alternative for the petroleum based diesel fuels.

Biodiesel fuel is produced via different techniques such as: direct/ blends, microemulsion, pyrolysis and transesterification. Among these techniques, homogeneous catalytic transesterification in stirred vessel reactor is the most preferable processing technique. Fig 1 presents transesterification of triglyceride to biodiesel.

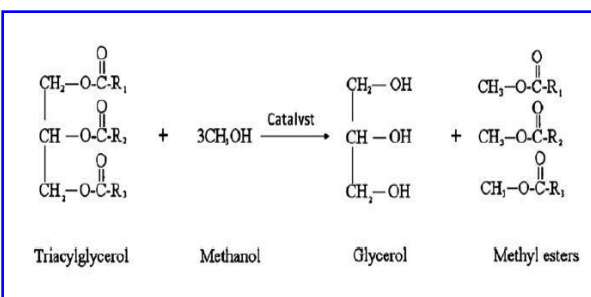


Fig. 1: Transesterification process for the conversion triglycerides to biodiesel

This method of production bears some technical and environmental disadvantages, such as mass transfer limitation due to the immiscibility of oil in methanol, non-uniform product specification, difficulties to run in a continuous process, higher energy consumption because of long processing time, high alcohol usage and high reaction temperature to obtain complete conversion, large amount of wastewater produced from purification steps and large reactor volume. The above mentioned technical challenges can be overcome using membrane reactor. In such an integrated process, the membrane can play the role as separator and reactor to increase transesterification rate and yield.

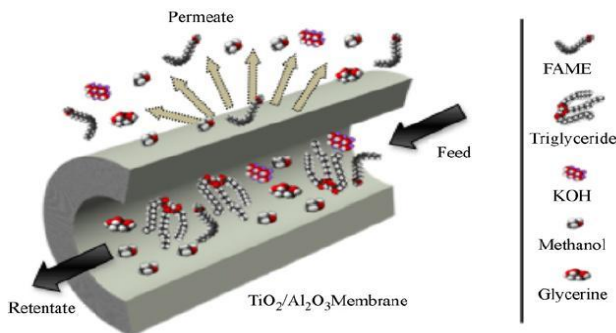


Fig 2: Combination of transesterification and triglyceride separation in the membrane reactor.

(A) Process Intensification Using Membrane Reactor

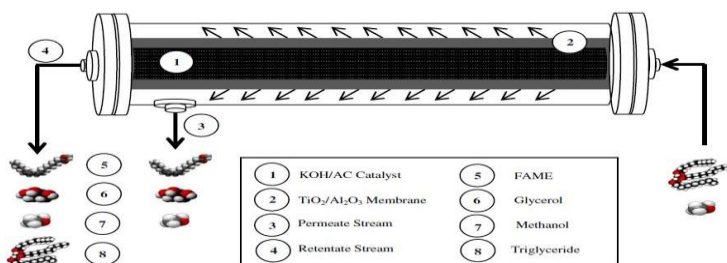
In a membrane reactor the membrane can fulfill different functions:

- Selectively remove the products from the reaction mixture.
- Control the addition of reactants to the reaction mixture.
- Intensify the contact between reactants and catalyst.

During the transesterification reaction in a membrane reactor, the large droplet of oil cannot pass through the membrane pores. On the other hand, the produced biodiesel which consists of fatty acid alkyl esters with small molecular sizes is able to pass through the membrane along with alcohol, glycerin and catalyst (Fig 2).

Centre for Separation Science and Technology (CSST) has developed a novel continuous reactor to produce high quality methyl ester (biodiesel) from palm oil. In this study, amicroporous $\text{TiO}_2/\text{Al}_2\text{O}_3$ membrane was packed with potassium hydroxide catalyst supported on palm shell activated carbon (Fig 3). The membrane reactor was combined with a distillation unit to minimize the consumption of methanol by continuous recycling process.

Fig 3: Combination of heterogeneous base transesterification and triglyceride separation in the packed bed membrane



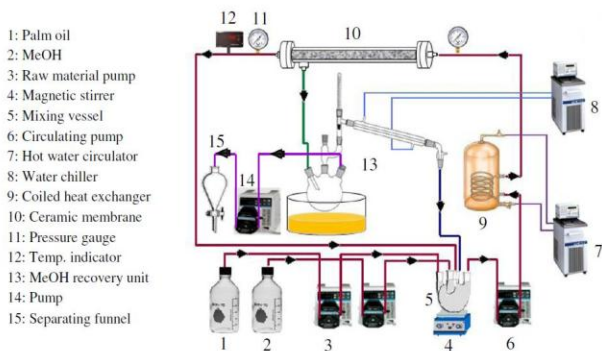


Fig 4: Schematic diagram of packed bed membrane reactor to produce biodiesel.

The laboratory scale experimental setup for biodiesel production is shown in Fig 4. A tubular $\text{TiO}_2/\text{Al}_2\text{O}_3$ membrane was used as reactor and separator. The length, inner diameter, outer diameter and pore size of the membrane was 40 cm, 1.60 cm, 2.54 cm and 0.05 μm , respectively.

First, methanol was charged continuously into the reactor using the third pump (circulating pump) and heat exchanger was started up to heat the reactant. Subsequently the reactor was filled with palm oil. Pressure inside the membrane was monitored by two pressure gauges and was controlled at 1 barg. The permeate stream containing biodiesel, glycerol and methanol was collected in the round bottom flask of the methanol recovery unit. Methanol which is one of the transesterification reactants and which has a lower boiling point was evaporated, distilled and returned to the system to minimize the consumption.

(B) Membrane for Biodiesel Purification

We have studied the effect of membrane pore size to the production of biodiesel. From the previous literature, the smallest membrane pore size used was 0.05 μm . In this study, a ceramic membrane with a pore size of 0.02 μm was used to purify crude biodiesel to achieve biodiesel product that meet both ASTM D6751 and EN 14241.

Compared to the membrane with a pore size of 0.05 μm , membrane with a pore size of 0.02 μm presented lower permeates fluxes but high-quality biodiesel was achieved. This is a demonstration of the versatility of membrane technology. Even if in the future the standard of biodiesel quality become more stringent, ceramic membrane with pore size of 0.02 μm or lower could be used. However a compromise has to be made between permeate flux and biodiesel quality when selecting the membranes.

The optimum condition obtained were transmembrane pressure 2 bar, temperature 40 $^{\circ}\text{C}$ and flow rate, 150 L/min with corresponding permeate flux of 9.08 (kg/m^2 h). At these optimum conditions, the values of free glycerol (0.007 wt%) and potassium (0.297 mg/L) were all below ASTM standard specification for biodiesel fuel. From both studies that have been done, membrane reactor was observed to restrict the passage of unreacted oils to biodiesel product mixture, hence providing high-quality biodiesel fuel.

Related Awards

- UM Gold Medalist (2009)
- Gold Medal in 20th International Invention, Innovation and Technology Exhibition (ITEX'09)
- Silver Medal (9th Malaysia Technology Expo 9th Invention & Innovation Award, 2010, 4-6 Feb, PWTC, KL)

Related Publications:

- S. Baroutian, M.K. Aroua, A.A.A. Raman, N.M.N. Sulaiman (2011), A packed bed membrane reactor for production of biodiesel using activated carbon supported catalyst, *Bioresource Technology*, 102 1095-1102.
- S. Baroutian, M.K. Aroua, A.A.A. Raman, N.M.N. Sulaiman (2010), Methanol recovery during transesterification of palm oil in a $\text{TiO}_2/\text{Al}_2\text{O}_3$ membrane reactor: Experimental study and neural network modeling, *Separation and Purification Technology*, 76 58-63.
- S. Baroutian, M.K. Aroua, A.R.A. Aziz, N.M.N. Sulaiman (2010), $\text{TiO}_2/\text{Al}_2\text{O}_3$ membrane reactor equipped with a methanol recovery unit to produce palm oil biodiesel, *International Journal of Energy Research*, 36 120-129.
- I.M. Atadashi, M.K. Aroua, A.R.A. Aziz, N.M.N. Sulaiman (2012), High quality biodiesel obtained through membrane technology, *Journal of Membrane Science*, 421 154-164.
- I.M. Atadashi, M.K. Aroua, A.R.A. Aziz, N.M.N. Sulaiman (2011), Membrane biodiesel production and refining technology: A critical review, *Renew. Sust. Energy. Rev.*, 15 5051-5062.

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New Generation Dental Posts Based on Functionally Graded Material

By

Prof. Dr. Noor Hayaty Abu Kasim

The restoration of endodontically or root treated teeth is a challenging task as it usually involves the rehabilitation of teeth with significant loss of tooth structure. In order to rehabilitate root canals and provide retention for the crowns, two types of the post systems are usually used: cast and prefabricated posts which are commercially available in different geometries, dimensions and made from various materials. The concept of functionally graded materials (FGM) has been conceived as a new material design approach to improve performance compared to the traditional homogeneous and uniform materials. Moreover, the difference between thermal properties of these dental posts and tooth structure give rise to thermo-mechanical stresses. High stress concentration can develop at the restorative material /tooth interfaces and thus increase the susceptibility fracture of endodontically treated teeth.

In order to overcome these shortcomings of current dental posts, FGM dental posts consisting of functionally graded multilayered composite were fabricated and characterized. Various combinations of metal and ceramic materials; titanium (Ti), zirconia (ZrO_2), alumina (Al_2O_3), and hydroxyapatite (HAp) were used for the novel dental post. The application of the FGM concept achieved the composition and properties that can be varied continuously along the preferred directions making the fabrication of dental posts with multilayered structure with high stiffness at the cervical region and gradually reduced apically possible. These novel dental posts also reduce thermo-mechanical stress concentration at both the coronal and apical parts of teeth. The improved thermo-mechanical properties are also able to mimic the performance of a natural tooth under stress.

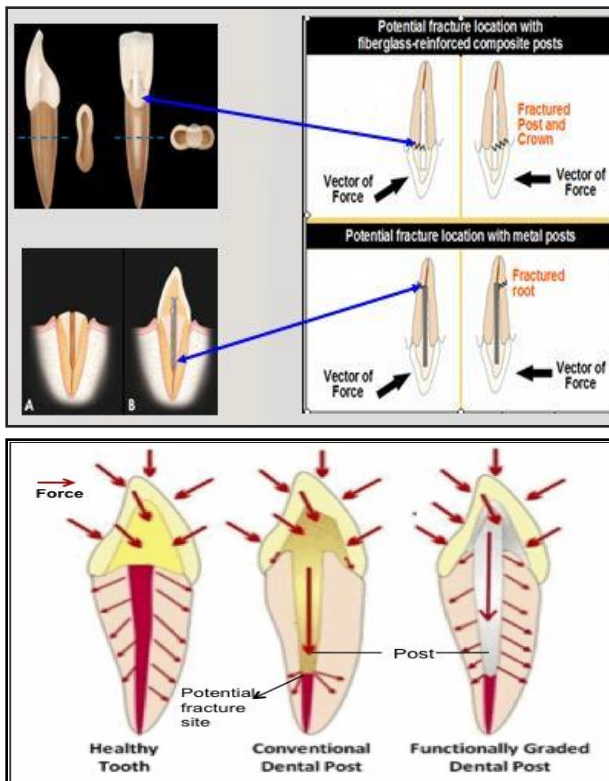


Fig 1: The significant mismatch between material properties such as stiffness of these types of posts and surrounding dental tissues resulting in the poor stress distribution and root fracture.

From the scanning electron micrograph analysis of the interface, a continuous and graded phase distribution confirmed that the functionally graded structured dental post has been achieved (Fig 2). The linear shrinkage after sintering along the layers also confirmed linearity of properties change. EDX and XRD analyses were also used to characterize the composition and microstructure from different areas of FGM thus proving the presence and gradual change of Ti-HA- ZrO_2 - Al_2O_3 elements and phases. Physical and mechanical properties changed gradually, which also confirms the functionally graded structure of the multilayered composite.

PATENT

International PCT APPLICATION:
PCT/MY2012/000246
(based on Malaysian Patent Application:
PI2011004506)

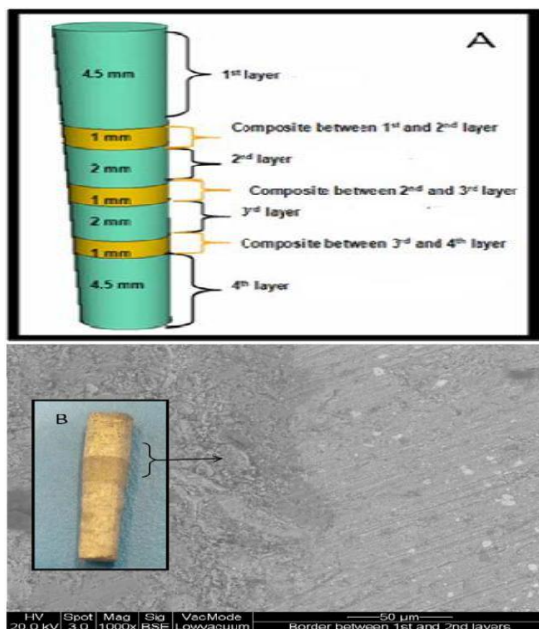


Fig 2: Functionally graded structured post composition (A) and the Prototype (B).

FGSPs showed lower Von Mises stress concentration compared to the commercial dental posts as illustrated in Fig 3. The Ti concentration variation in xTi-yHA provided a smooth change in the properties of FGSP offering advantages such as reduction of stress concentration. The FGSPs improved the stress dissipation and barred stress propagation into the structure successfully.

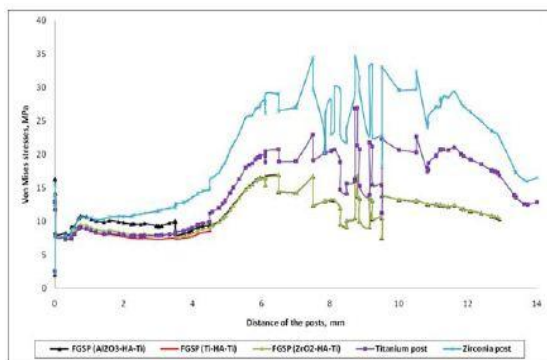


Fig 3: Von Mises stress distributions along central axis of FGSP under oblique loading.

The FGSPs also dissipated the interface stress efficiently compared to commercial dental posts as shown in Fig 4. The high stress concentration at the middle and the apical parts are undesirable, which may eventually cause debonding between the post and the root canal.

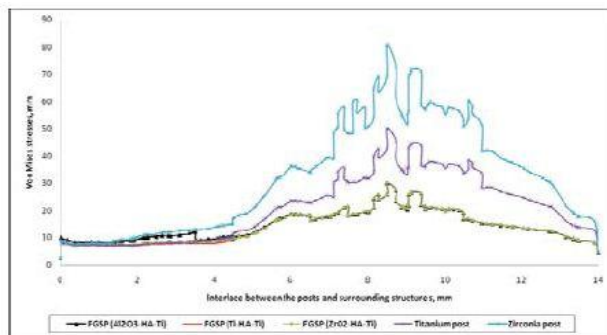


Fig 4: Von Mises stress distributions at post/tooth interface under oblique loading.

This new generation functionally graded structured post is highly recommended to replace the traditional dental post in the market today. The major contribution of this novel dental post is to the stability and clinical durability of endodontically treated teeth thus uplifting patients' quality of life.

RELATED AWARDS

- Gold Medal: PECEPTA 2011
- Gold Medal: 22nd International Invention, Innovation & Technology Exhibition (ITEX' 2011)
- Gold Medal & Special Award (Woman BioInnovator): Bio-Malaysia 2010
- Gold Medal: International Invention, Innovation & Technology Exhibition (ITEX' 2010)
- Silver Medal: Malaysia Technology Expo 2010
- Bronze Medal: International Conference on Functional Materials and Devices (ICFMD' s 2010)
- Bronze Medal: Bio-Malaysia 2009
- Silver Medal: PECEPTA 2009

Related Publications:

- R. G. Rahbari, N. H. Abu Kasim, A. A. Madfa, M. Hamdi, M. Bayat. (2011). Porosity Reduction Model in Titanium-Hydroxyapatite FGM Composites Using Shrinkage Measurement. *Journal of Material Research Innovations*; 15(Suppl 2): S1-S5 (In press). ISI cited journal.
- N. H. Abu Kasim, A. A. Madfa, M. Hamdi, R. G. Rahbari. (2011). 3D-FE Analysis of Functionally Graded Structured Dental Posts. *Journal of Dental Materials*; **30**(6): 869-880. ISI cited journal.

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QUENCHING BACTERIAL VIRULENCE WITHOUT THE USE OF ANTIBIOTIC

Targeting signaling molecules of epidemic-causing bacteria in farmed fish could reduce the need for antibiotics



By
Dr. Chan Kok Gan

Tilapia (*Oreochromis niloticus* as majority) is an important commercial fish in freshwater aquaculture around the world. The global tilapia production reached 2.5 million tonnes worth 3.7 billion US dollars in 2009 (www.fao.org). Malaysia is one of the major tilapia production countries. In 2009, a bacterial epidemic killed approximately 50% of the Malaysian stock of tilapia.

Dr. Chan Kok Gan and his research group with his international colleagues, have teamed up and working on developing a novel way to reduce the virulence of future outbreaks that could curb the need for treatment with antibiotics

Many bacterial virulence factors are regulated in a population density-dependent manner known as quorum sensing (QS) which involves the synthesis of small, often diffusible signal molecules. Quorum sensing is growth dependent cell-cell communication that is a key regulatory system in bacteria for controlling gene expression including virulence factor. As the bacterial population grows, the QS signaling molecules in the extracellular environment accumulates. Once the concentration of the signaling molecules reaches the threshold level, they diffuse back into the bacterial cell, binds to their cognate receptor and trigger changes in gene expression in response to population density. *N*-acyl homoserine lactone (AHL) is one of the well characterized QS signal molecules. Different AHLs possess a homoserine lactone ring with an attached fatty acyl side chain of 4 to 18 carbons. The acyl side chain may be saturated or unsaturated with a hydroxy or oxo group on carbon 3. AHL production is widespread among *Proteobacteria* present in a wide variety of environmental niches.

Interrupting QS signaling has been suggested as a promising approach to reduce the expression of QS-regulated virulence factors. This is known as quorum quenching (QQ). Enzymatic inactivation of AHLs can be achieved by either opening the lactone ring moiety using an *N*-acylhomoserine lactonase (AHLase) or detaching the *N*-acyl side chain from the lactone ring via an AHL acylase. Besides degradation, AHLs can be modified by oxidation. The AHL degrading enzymes are widely distributed among both prokaryotes and eukaryotes. It is not surprising that the AHLase exists in bacteria in order to reduce QS “noise” from their neighbors and prevent unnecessary gene expressions. In eukaryotes AHLase exists in order to disrupt communications among pathogens during infection, thereby acting as a defensive mechanism.

To date, Dr. Chan Kok Gan and his group have studied five potential bacterial pathogens that were isolated from diseased Tilapia fish in Malaysia. These bacterial pathogens were identified as *Bacillus* sp. W2.2, *Klebsiella* sp. W4.2, *Pseudomonas* sp. W3 and W3.1 and *Serratia* sp. W2.3 based on their 16S rDNA sequences, which were PCR amplified, sequenced, aligned and matched against similar sequences in NCBI GenBank. The 16S rDNA sequences of isolates *Serratia* sp. W2.3, *Pseudomonas* sp. W3, *Pseudomonas* sp. W3.1, *Bacillus* sp. W2.2 and *Klebsiella* sp. W4.2 have been deposited in GenBank under the following accession numbers: JF317349.1, JF487789.1, JF423918.1, JF487790.1 and JF317350.1, respectively.

Proteolytic activity assays confirmed that with the exception of *Klebsiella* sp. W4.2, all isolates showed distinct proteolytic activity. Furthermore *Bacillus* sp. W2.2 and *Pseudomonas* sp. strains W3 and W3.1 also displayed haemolytic activity. By using high resolution liquid chromatography mass spectrometry, the presence of unusually long-chain *N*-(3-oxohexadecanoyl)-homoserine lactone (3-oxo-C16-HSL) from *Pseudomonas* sp. W3.1 and *N*-dodecanoyl-homoserine lactone (C12-HSL) from *Serratia* sp. W2.3, have been revealed (Fig 1). Interestingly, *Pseudomonas* sp. W3.1 also produced a wide range of *Pseudomonas* quinolone signalling (PQS) molecules. *Pseudomonas* sp. W3 did not show any quorum sensing properties but possessed quorum quenching activity that inactivated AHLs. This study is the first documentation that shows unusual long-chain AHLs production in *Serratia* sp. and *Pseudomonas* sp. isolated from diseased fish and the latter also produce a wide range of PQS molecules.

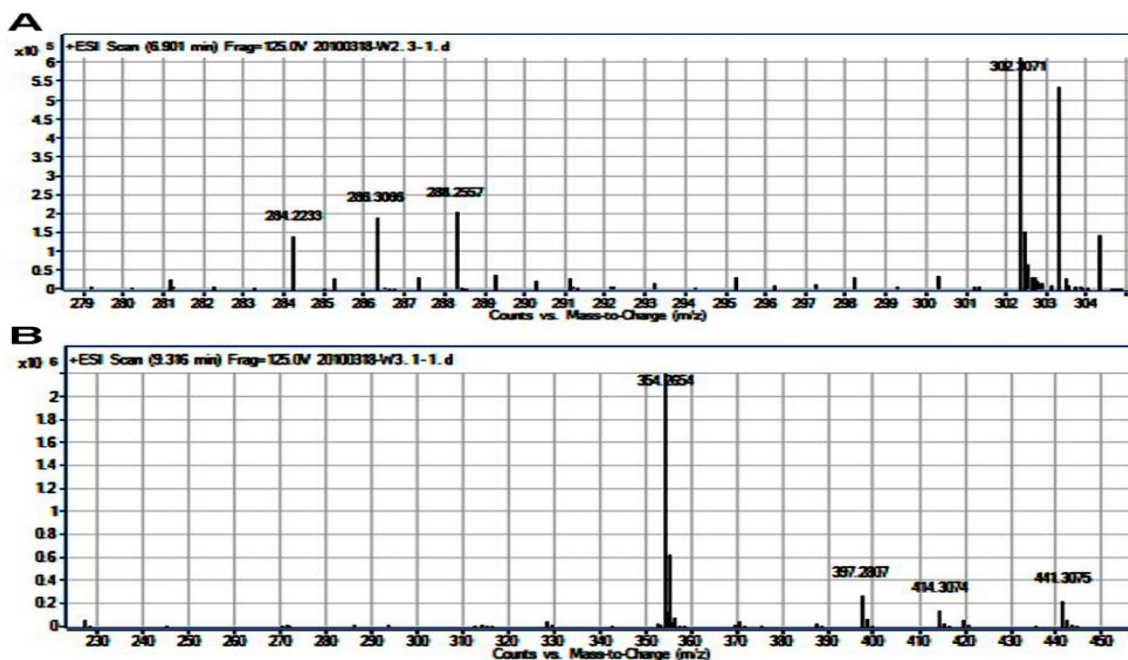


Fig 1: High resolution mass spectrometry analysis of AHLs.

(A) ESI-MS spectrum of C12-HSL (m/z :284.2233; 6.90 min) extracted from *Serratia* sp. W2.3; (B) ESI-MS spectrum of 3-oxo-C16-HSL (m/z :354.2654; 9.32 min) extracted from *Pseudomonas* sp. W3.1.

Related Publication:

•Chang C-Y, Koh C-L, Sam C-K, Chan X-Y, Yin WF, et al. (2012) Unusual Long-Chain *N*-Acyl Homoserine Lactone Production by and Presence of Quorum Quenching Activity in Bacterial Isolates from Diseased Tilapia Fish. PLoS ONE 7(8): e44034. doi:10.1371/journal.pone.0044034

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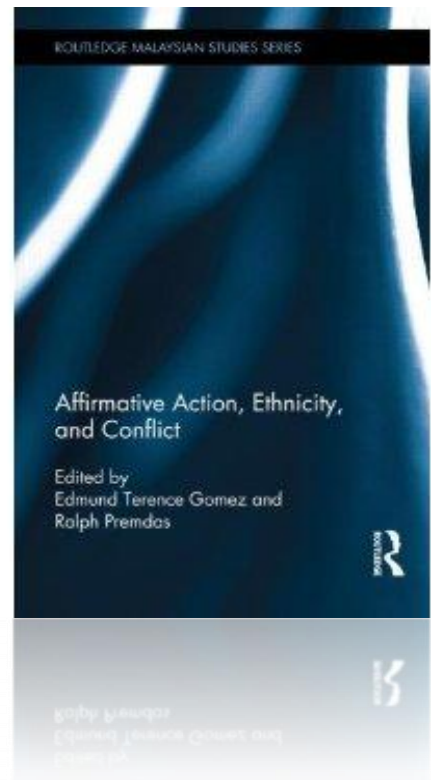
Flagship Research Project Affirmative Action, Identity and Conflict

The flagship research project on 'Affirmative Action, Identity and Conflict' was conceived in 2009 at the University of Malaya. The primary concern of this study was to understand why affirmative action, an extremely progressive social policy implemented to redress serious social and economic inequities in multi-ethnic and multi-religious countries, has been the subject of much controversy. Affirmative action had long been seen as the most effective policy to deal with ethnic, social, economic and political inequities, including those that had led to serious conflicts. Ralph Premdas, Professor of Public Policy from the University of Toronto, who has published extensively on the issue of ethnic conflict, was invited to spend a year at the University of Malaya to help implement this project.

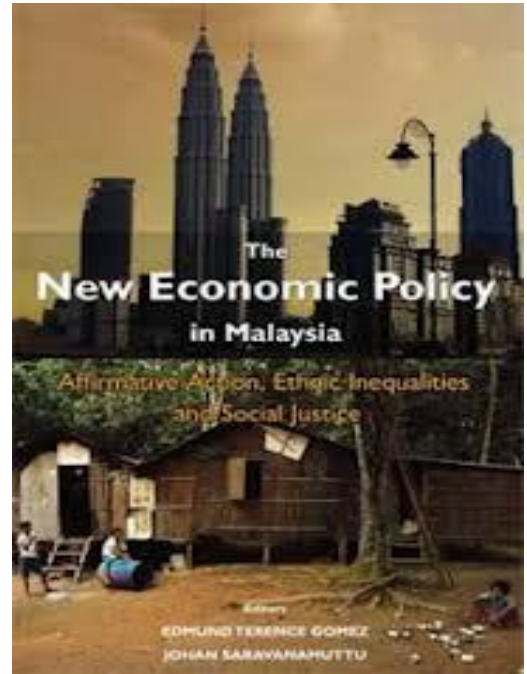
The primary objective of this project was to assess the manner in which public initiatives involving affirmative action had been conceived and implemented. It was evident that the governments of multi-ethnic countries have adopted different affirmative action strategies to deal with inequality and the issues of exclusion and marginalization. The particular concern to this study was whether policy mechanisms to resolve structural inequalities in societies should be universal in orientation or targeted at disadvantaged ethnic groups.

Three projects have been planned and implemented under this flagship study. The first project involved a comparative assessment of the implementation of affirmative action in seven countries, that is Malaysia, South Africa, Fiji, Northern Ireland, India, the United States and Brazil. When the German-based funding agency, Konrad-Adenauer Stiftung, was approached to fund this study, the directors were most supportive of the need to undertake this comparative research. This project, involving a workshop and a conference, was hosted by the University of Malaya's International Institute of Public Policy and Management (INPUMA) in April and November 2010 respectively.

The outcome of this project, apart from about half a dozen journal articles by team members, was the publication of an internationally refereed book entitled ***Affirmative Action, Ethnicity and Conflict***. This edited volume was published by Routledge of London in 2013. (The jacket of this book is featured below and copies are available through the publisher's Malaysian distributor, Taylor & Francis Asia Pacific, located at No. 23-2, Jalan PJS 8/18, Dataran Mentari, 46150 Petaling Jaya, Selangor. Tel: +603 56301361.)



The second project under this flagship programme involved a review of the effectiveness of affirmative action strategies that had been actively implemented in Malaysia after 1970. This project involved an exhaustive assessment of one of Malaysia's most important policy initiatives, the New Economic Policy (NEP). This project was jointly hosted by the Social & Behavioural Science Research Cluster and Singapore's Institute of Southeast Asian Studies (ISEAS). Funding for this project was primarily provided by ISEAS, with financial support from the Konrad-Adenauer Stiftung. This project was conceived to address an issue of major public concern. In 2009, following the onset of the global financial crisis, the Malaysian economy descended into a serious recession. This economic crisis precipitated an extensive public debate about the effectiveness of affirmative action strategies that had been implemented. The results of this study were published as an edited volume entitled ***The New Economic Policy in Malaysia: Affirmative Action, Ethnic Inequalities and Social Justice***, published by the National University of Singapore Press in 2013. (The jacket of this book is featured below and the book is available in all major bookstores in Malaysia and Singapore.)



The third project under this flagship study involved a joint study by the University of Malaya and Duke University's Center for African and African American Research. In 2010, this centre had signed a Memorandum of Understanding with the University of Malaya and this was the first programme of collaborative research between faculties of both institutions. This project involved a worldwide comparative assessment of the simultaneous implementation of affirmative action and the economic development model known as neoliberalism. The implementation of neoliberalism was seen as a reason for the global financial crisis. Another primary goal of this project was to think through of the politics of affirmative actions as it has been practiced transnationally, particularly contrasting the practices of governance under different models of development. An international conference on '**Neoliberalism, Inequality and the Politics and Culture of Affirmative Action**' was held at Duke University from 8-10 November 2012, jointly funded by the co-hosts. This conference brought together international scholars from the United States, India, Brazil, Northern Ireland, Malaysia, Ecuador, Colombia and Fiji. A special issue journal publication is being prepared based on the papers presented at this conference. A special documentary is being made about the issues presented at this conference with interviews given by all the speakers. This documentary will be screened in the US in 2013. For those interested in listening to the speakers, a video footage of all the papers presented at this conference can be found at the following web link: https://www.youtube.com/watch?v=Xl7OWel6x_o.

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Professor Ir. Mohamed Rehan Karim



Please give us a brief on your background?

Currently, I am a professor in the Civil Engineering Department, University of Malaya since 2003 as well as the Director of the Center for Transportation Research (CTR), based in the Civil Engineering Department, Faculty of Engineering. The CTR is a multi-disciplinary research center comprising of academics from various departments and faculties in UM working together in specific areas of transportation. What used to be the Transportation Research Group (TRG) at the Civil Engineering Department (my background is civil engineering – transportation, highway & traffic engineering) the multi-disciplinary research activities and professional services provided to both government agencies and the private sector, has transformed the research group into what is now the CTR in the last couple of years. I am also the president of the Transportation Science Society of Malaysia (TSSM) and a board member of the Eastern Asia Society for Transportation Studies (EASTS) based in Tokyo, Japan. I am also the country representative for the World Conference on Transport Research Society (WCTRS) based in France.

Can you briefly describe your current research and its impact to society?

There are a number of different areas in transportation which we are currently involved that would have significant positive impact on society.

One area is on intelligent transport system (ITS) and our main emphasis in this respect is to develop new technologies that would improve the transportation systems locally and abroad. For example, one of our research thrust was to develop a weigh-in-motion (WIM) system that would improve the current method of monitoring heavy vehicles and enforcement of vehicle weight limits.

This has significant impact on society because vehicle overloading on Malaysian roads has caused premature road (pavement) failures, significant number of road fatalities, and higher fuel consumption and GHG emissions.

The implementation of our WIM system as an advanced vehicle weight sorting system alongside the current static weight stations would definitely bring significant positive impact on society, such as huge savings from public expenditure on road maintenance, reduction in accident fatalities and reduction in fuel consumption and GHG emissions.

Another example of research area in transportation that we are currently focusing is on the usage of modified asphalt and asphalt pavement materials. Apart from looking at various ways to improve the performance of the asphalt pavement, efforts are also made towards utilizing local materials and suitable waste materials in asphalt pavement. Not only will this lead towards savings from import substitution, but also will help in reducing the environmental burden by utilizing some of the suitable waste materials in asphalt and/or concrete pavement.

Yet another example of research area that we are currently focusing is on sustainable transport which includes public transport (PT) and non-motorised transport (NMT). It is common knowledge that some of the calamities/challenges of modern day urban life in developing countries (and probably in some developed countries as well) such as traffic congestion, air pollution, excessive travel time/delays, to name a few are directly related to the over-dependence on the private vehicle for commuting trips and other trips as well.

There is definitely a serious need to look at more appropriate land use that would support transit systems, PT and NMT. The use of NMT as feeder modes for transit systems and PT has been explored as well as the use of special low capacity minibuses as feeder for the transit systems. Significant positive impact on society is expected when sustainable transport system is made available.

What is the cutting edge technology in your field of research?

One example of a cutting edge technology in our field of research is the development of a method/technique in quantifying and capturing various vehicular and traffic data in real time, without the need of estimating those data using some kind of post-processing technique (which is still considered not accurate, just an estimate). Current technology is only capable of getting estimates after post-processing of axle counts (good/bad estimates) and there is no way of checking/validating after the raw data was collected. In the new cutting edge technology that we developed at CTR (is already patent pending) the commercial-ready prototype of the traffic classifier system (named *RealCount™*) received the gold medal and Best of the Best award at the recent Malaysian Technology Expo (MTE) 2013.

What are your research plans for next five years?

We will endeavor to strengthen our research efforts in these areas of transportation as well as other areas in which we have the expertise. We are now embarking strongly in the area of road safety as well as low carbon transport (green transport). We have managed to develop systems and instrumentation to capture accurate parameters/data for research in these areas. We would like to continue developing new technologies and state-of-the-art systems and products in the transportation field in the next five years. Amongst our long-term goals in research is to contribute towards making Malaysia a technology provider internationally and not just a technology consumer/purchaser.



What advise would you give to the juniors to achieve their best like you?

I do not think I have achieved anything much compared to other scientists/researchers in UM and as such I'm not in a position to give advice to others. Nevertheless, in my opinion it is only natural for an academic to pursue his/her own research interest and to excel in the chosen field or discipline. Based on my brief and little experience, depending on the field/discipline one could probably achieve more when working in a team in research. Whatever the situation, continue to strive your very best in the research area of your choice and in your pursuit of academic excellence. Whatever little that we do as academician, in my opinion, should lead towards a betterment of our society and beloved country.

Contact

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National Higher Institution Center of Excellence (HICoE) : UM Power Energy Dedicated Advanced Centre (UMPEDAC)

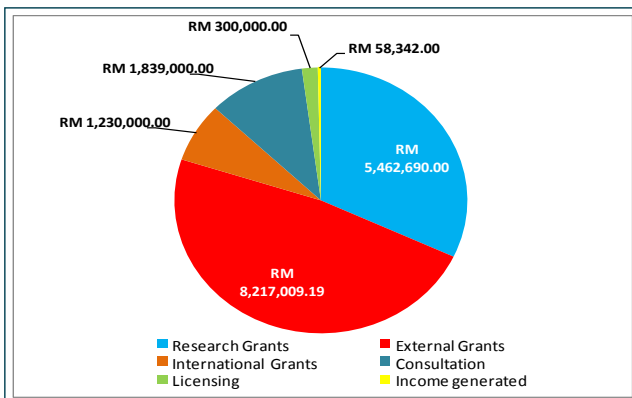
UMPEDAC was well established since 2000 as a small centre and recently grows as a Higher Education Provider (PTj) in University of Malaya and recognized as a Higher Institution Centre of Excellence by the Ministry of Higher Education on 30 October 2009. Core businesses of UMPEDAC include continuous research activities in various types; fundamental; lab-scale prototype; pre-commercialize; and commercialized products, Consultancy services to local industries, Training and Courses in Engineering Skills, Specialist Research Facilities for Solar Energy and offering Postgraduate Programmes, (PhD and M.Phil) by coursework and research.

THE RESEARCH OUTPUTS AND ACTIVITIES

The Key performance indicator as a HICoE and a Higher Education Provider (PTj) is related to each other to ensure UMPEDAC meets the criteria. The KPI as a HICoE is not only limited to research outputs and the publications, nowadays the government (Ministry of Higher Education) also emphasize on peer recognition at the international level, contribution to the community, knowledge transfer program, and involvement of academic experts as principal investigator in the international projects.

The pie chart below shows the amount of research grants received from years 2008-2012 cover the external grants, research grants, consultation, international grants, licensing and training course. The highest percentage is from external grants (48%), obtained from the HICoE funding, and followed by research grants (32%) including projects such as Technofund, CRDF, Sc.fund, PRGS, ERGS, HIR, Flagship and UMRG.

Total Amount (RM) Research Grant for a year 2008-2012



In terms of the publication, UMPEDAC, now ranked 7th out of 33 Faculty/Institution in UM with the total number of publications in the year 2012 was 44. UMPEDAC began to emphasize on publication in the niche area (renewable energy) to ensure prominence in the niche area set by MOHE.

Apart from carrying out research projects with industry, university or organization, UMPEDAC began to engage in community projects with schools. The community programs were conducted to provide exposure to the students in the renewable energy applications for science projects at school and encourage creativity. The activities include:

- International Science & Technology Program with SM Sains Seri Puteri Kuala Lumpur and Princess Chulabhorn College, Thailand on 20 September 2012.
- Joint project with University of South-East Asia in Energy Education and Rural Electrification in Cambodia on 5-8 August 2012.
- Malaysia "Back to School" program for Science & Mathematics week in collaboration with Academy Science Malaysia at SMK Kubis, Sarawak on 28 July 2011.



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Marine Centre of Excellence: Institute of Ocean and Earth Sciences (IOES)

The discovery of suitable DNA Barcoding for *Kappaphycus* and *Eucheuma* is very important as these species are carrageenan-producing red seaweeds commercially cultivated worldwide, offering lucrative business prospects and job opportunities to countries involved in the seaweed industry. Extensive morphological variations within these carrageenophytes have long been an issue amongst farmers and the carrageenan industries as the planting of wrongly identified seaweed varieties resulted in inevitable loss of productivity. Results of this study have revealed that the *cox2* molecular marker offers the best genetic variation and accuracy for DNA barcoding of *Kappaphycus* and *Eucheuma*. However the *cox2*-3 spacer which is to date more widely used, coupled with the almost similar barcoding quality as the *cox2* marker should be utilized for DNA barcoding of these carrageenophytes in the future. The DNA barcoding of *Kappaphycus* and *Eucheuma* using a universal DNA barcode will help immensely the selection of "correct" and uniform strains of carrageenophytes for commercial farming, thereby boosting effective yield. The availability of a DNA barcode library would also render the selection and documentation of new, better strains or species as seedlings less difficult.

Poong et al (2013) described a new species of crustose brown algae, *Mesospora elongata* sp. nov. (Ralfsiales, Phaeophyceae), from the Indo-Pacific region. Results from this study add to the current tally of recognised *Mesospora* spp., bringing the total number to six. As the original author did not designate a holotype among specimens from the syntype localities, lectotypification of *M. schmidtii* was also conducted in the course of this study. This is important because a lectotype serves as a reference point for other co-workers to compare their specimens of *Mesospora* to *M. schmidtii* as described by the original author.

Related Publications:

•Ji Tan, Phaik-Eem Lim, Siew-Moi Phang, Dang Diem Hong, H. Sunarpi, Anicia Q. Hurtado (2012). **Assessment of four molecular markers as potential DNA barcodes for red algae *Kappaphycus* Doty and *Eucheuma* J. Agardh (Solieriaceae, Rhodophyta).** PLoS ONE 7(12): e52905. doi:10.1371/journal.pone.0052905 (Tier 1)

•Poong S.-W., Lim P.-E., Phang S.-M., Gerung G.S., Kawai H. 2013. ***Mesospora elongata* sp. nov. (Ralfsiales, Phaeophyceae), a new crustose brown algal species from the Indo-Pacific region.** Phycologia 52 (1), 74–81 DOI: 10.2216/12–42.1(Tier 2).

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Picture of *Kappaphycus*



Picture of *Eucheuma*



A micrograph of *M. elongata* showing erect filaments with plurilocular reproductive structures (Scale= 100µm)



Mesospora elongata sp. nov. growing on rocks



Dr. Lim Phaik Eem holding *Kappaphycus*

Potential Higher Institutions Centre of Excellence : Photonics Research Centre University of Malaya (PRCUM)

Optical Microfiber Technology for Wavelength Division Multiplexing Network (WDM)

To meet the ever-increasing requirement for high speed transmission in the optical communication system, data traffic management plays an important role in ensuring the optimum utilization rate is achieved on the national network with limited bandwidth and infrastructure. The Optical Add-Drop Multiplexer (OADM) is one of the important components in Wavelength-Division Multiplexing systems (WDM) and Dense Wavelength-Division Multiplexing systems (DWDM), which is employed in the multiplexing and routing of data channels of light into or out of a single mode fiber (SMF). Currently, the commercially available OADMs are made from several individual fiber-optic components, namely the Fiber Circulators and the Fiber Bragg Grating (FBG).

A new Add-Drop optical multiplexer based on Mach-Zehnder / Sagnac interferometer (MZ-SI) configuration is proposed. This device is fabricated from single low-loss optical microfiber using an engineered fabrication technique. The miniaturized MZ-SI structure can be assembled from a single microfiber into a dimension in the order of 10^{-3} m. Similar to the conventional optical Add-Drop filter, the proposed MZ-SI has the through and drop ports. It was proven in [1] that the output spectra of the MZ-SI microfiber structure are in good agreement with the theoretical model. Fig 1 shows a photo and the output spectra obtained from the proposed MZ-SI add-drop filter. The coincidence between the dip and peak wavelengths indicates the compatibility of the proposed MZ-SI add-drop filter to the commercial OADMs.

The microfiber structure can be fabricated by using the mechanical tweezers. Leveraging from the simplicity and flexibility design of this microfiber device (for e.g. the microfiber can be twisted in multiple ways), specific output spectra can be engineered to meet various specification and requirement in the optical network system. Fig 2 shows micrographs for microfiber Mach-Zehnder / Sagnac Interferometer (MZ-SI). In comparison with the aforementioned OADM, the proposed Add-Drop multiplexer has more advantages in terms of simple fabrication, cost effective, compact and easy integration with the existing fiber-optic system. Moreover, microfiber based MZ-SI offers the advantage of spectral tunability during the fabrication by using tweezers. The path length difference in the MZ part of the MZ-SI controls the wavelength spacing of the multiplexer.

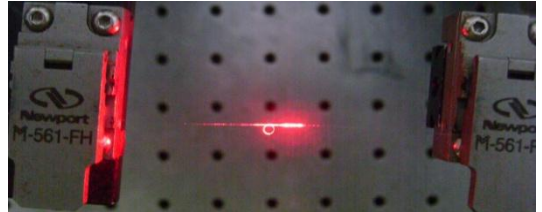


Fig 1: Output spectra of the multiplexer for different path length differences (a) 1.6mm and (b) 0.9mm

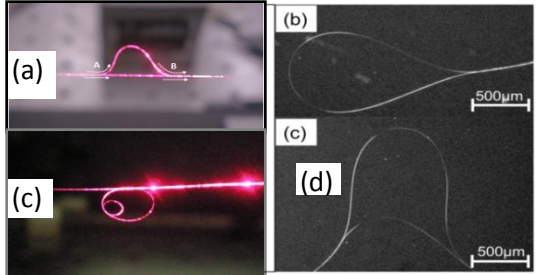


Fig 2 : (a) A microfiber MZ. (b) Microscope images of a SL. (c) A cascaded-microfibre knot. (d) MZ assembled from a ~3 μ m-diameter silica microfiber.

Related Publications:

- I. Aryanfar, K.-S. Lim, W.-Y. Chong, S. W. Harun, **H. Ahmad**, "Add-Drop Filter Based on Microfiber Mach Zehnder/Sagnac Interferometer," *Quantum Electronics, IEEE Journal of*, vol. 48, no. 11, pp. 1411-1414, 2012
- K. S. Lim, S. W. Harun, S. S. A. Damanhuri, A. A. Jasim, H. H. Ku, and **H. Ahmad**, "Low-cost spectral tunable microfiber knot resonator," *IET Optoelectronics*, vol. 5, no. 6, pp. 281-284, 2011.
- K. S. Lim, A. A. Jasim, S. S. A. Damanhuri, S. W. Harun, B. M. A. Rahman, and **H. Ahmad**, "Resonance condition of a microfiber knot resonator immersed in liquids," *Appl. Opt.*, vol. 50, no. 30, pp. 5912-5916, 2011.
- K. S. Lim, S. W. Harun, S. S. A. Damanhuri, A. A. Jasim, C. K. Tio, and **H. Ahmad**, "Current sensor based on microfiber knot resonator," *Sensors and Actuators A: Physical*, vol. 167, no. 1, pp. 377-381, 2011.

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A Candidate For Centre Of Excellence : Mushroom Research Centre

Mushrooms have always fascinated humans from time immemorial – some love them for the taste while others shun or even fear them. The known mushroom diversity is estimated to be 15 000 and of this 2000 are known to have culinary properties while only 900 are known to have medicinal value. Culinary and medicinal mushrooms that heal and prevent or reduce incidences of life threatening diseases are being rigorously and extensively researched in many laboratories in the world. An old Chinese saying is that ‘Food and Medicine’ have a common origin. This is very true of mushrooms as more scientific research are undertaken to validate traditional knowledge of their potential to contribute towards wellness of humankind. Realising the importance of mushrooms for human wellness as well as the unexploited mushroom diversity in Malaysia, researchers at Mushroom Research Centre undertake a variety of mushroom related research.

The Mushroom Research Centre, a virtual centre of University Malaya brings together 11 principals and 12 associate researchers, three postdoctoral scholars and 59 postgraduate students from the Faculty of Science and Medicine, University of Malaya as well as researchers from national and international institutions involved in fundamental and applied research related to mushrooms. This enables researchers to better coordinate inter-disciplinary collaboration in the pursuit of sustainable research excellence. The whole spectrum of mushroom biology and biotechnology are investigated at MRC. Research activities include acquisition and documentation of mushroom diversity in Malaysia; determination of biological activities of mushroom extracts and functional molecules for lifestyle diseases such as cardiovascular disorders, diabetes, cancer and neurodegenerative disorders; domestication of temperate and wild culinary and medicinal mushrooms of economic importance; documentation and scientific validation of traditional knowledge on culinary and medicinal mushrooms; characterization of mushroom products, in particular enzymes and secondary metabolites; development of methodology for large scale production of mushrooms and products from mushrooms by fermentation technology and mushrooms for bioremediation.

The findings are being published in reputable journals and MRC members are often invited to present their findings in national and international scientific meetings and workshops. Today we are recognised as one of the leaders in mushroom research. In bound international students and researchers come to MRC to enhance as well as share their knowledge in the several aspects of mushroom biology and biotechnology.



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Research Output

Research Publications based on ISI Web of Science Database

Number of Publications	2004	2005	2006	2007	2008	2009	2010	2011	2012*
	388	422	399	499	595	1091	1643	2124	2050
Number of Times Cited	2004	2005	2006	2007	2008	2009	2010	2011	2012*
	5535	3315	3806	4559	3949	5774	6099	3967	915
Citations / Publication	2004	2005	2006	2007	2008	2009	2010	2011	2012*
	14.27	7.86	9.54	9.14	6.64	5.29	3.71	1.87	0.45
h-index	2004	2005	2006	2007	2008	2009	2010	2011	2012*
	31	24	29	31	27	29	27	19	8

Research Publications based on Scopus

Number of Publications	2004	2005	2006	2007	2008	2009	2010	2011	2012*
	457	548	610	688	959	1363	1884	2485	2556
Number of Times Cited	2004	2005	2006	2007	2008	2009	2010	2011	2012*
	6177	4237	4856	5644	5099	6951	7376	5563	1489
Citations / Publication	2004	2005	2006	2007	2008	2009	2010	2011	2012*
	13.52	7.73	7.96	8.20	5.32	5.10	3.92	2.24	0.58
h-index	2004	2005	2006	2007	2008	2009	2010	2011	2012*
	35	29	31	33	28	28	27	23	11

* data compiled as of 27th February 2013

Source- UM Library

Research Output

2012 UM Publications indexed in WoS according to PTj – as of 27 February 2013

AUTHOR(S) WITH UM AS AFFILIATION	NO OF ARTICLES	TOTAL (1526)
FACULTY OF SCIENCE	722	31.04%
FACULTY OF MEDICINE	552	23.73%
FACULTY OF ENGINEERING	511	22.97%
PHOTONIC RESEARCH CENTRE	77	3.31%
FACULTY OF DENTISTRY	72	3.10%
FACULTY OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY	58	2.49%
POWER ENERGY DEDICATED ADVANCED CENTRE (UMPEDEC)	45	1.93%
FACULTY OF ECONOMICS & ADMINISTRATION	41	1.76%
FACULTY OF BUSINESS & ACCOUNTANCY	37	1.59%
FACULTY OF ARTS & SOCIAL SCIENCES	36	1.55%
INSTITUTE OF OCEAN & EARTH SCIENCE (IOES)	22	0.95%
CENTRE FOR FOUNDATION STUDIES IN SCIENCE	18	0.77%
FACULTY OF EDUCATION	18	0.77%
INSTITUTE OF GRADUATE STUDIES	17	0.73%
CENTRE FOR RESEARCH IN NANOTECHNOLOGY & CATALYSIS (NANOCAT)	15	0.64%
FACULTY OF LANGUAGE & LINGUISTICS	14	0.60%
SPORTS CENTRE	13	0.56%
FACULTY OF BUILD ENVIRONMENT	12	0.52%
UNIT ENHANCEMENT ACAD PERFORMANCE (ULPA)	9	0.39%
ASIA-EUROPE INSTITUTE	6	0.26%
RESEARCH FELLOW	5	0.21%
ACADEMY OF ISLAMIC STUDIES	5	0.21%
FACULTY OF LAW	4	0.17%
INSTITUTE OF CHINESE STUDIES	4	0.17%
CENTRE FOR MALAYSIAN INDIGENOUS STUDIES (CMIS)	3	0.13%
CENTRE FOR CIVILISATION DIALOGUE	2	0.09%
NATIONAL ANTARTICA RESEARCH CENTRE (NARC)	2	0.09%
ACADEMY OF MALAY STUDIES	2	0.09%
INPUMA	2	0.09%
INSTITUTE OF EDUCATIONAL LEADERSHIP	1	0.04%
LIBRARY	1	0.004
SKET	0	0.00%
CULTURAL CENTRE	0	0.00%
TOTAL	2326	100.00%

*Publications refer to : journal articles, review articles

** Total Publication : 1991; 270 Publications co-authored from more than 1 PTj

Source- UM Library

Controlling Double Quantum Coherence and Electromagnetic Induced Transparency with Plasmonic Metallic Nanoparticle.

C. H. Raymond Ooi · Kai Shuen Tan.

Plasmonics: DOI 10.1007/s11468-013-9487-0

A high impact paper (IF 3.7) in the journal *Plasmonics*, by Assoc Prof. Dr. Raymond Ooi and his research student from the Quantum and Laser Science group (QLS), Department of Physics, Faculty of Science, UM. The paper entitled "Controlling Double Quantum Coherence and Electromagnetic Induced Transparency with Plasmonic Metallic Nanoparticle" is a product of research work conducted after attending an international conference on plasmonics in China in early 2012. The work is ongoing and is funded by a HIR-MoHE Grant.

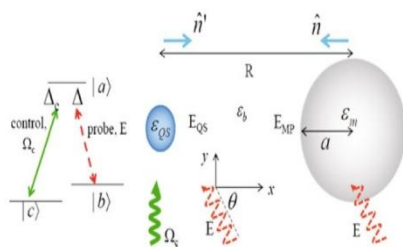


Fig 1 : (Color online) Configuration of a quantum system (QS) and a MP probed by a laser with field E . The internal states of the QS described by a three-level system with $a - c$ transition driven by a strong external control laser.

Plasmonics is one of the fastest growing recent fields at the interface of surface material science and optics. Recent advances in nanotechnology have extended the field to nanoplasmonics. Optical properties of nanoparticles are engineered for various optical effects, leading to new possibilities in optical materials such as efficient solar cells, highly sensitive detectors, nanolasers and next generation nanophotonic devices.

Although research into this domain provides promising applications and exciting futuristic technologies, it

requires profound theory based on a combination of quantum theory, optics and many-body physics. The Quantum and Laser Science group in HIR unit does research in developing such theory among related studies on quantum information science and quantum nonlinear spectroscopy. The recently acquired femtosecond laser enables QLS to study, for the first time in Malaysia, nonlinear optical phenomena in intense laser-matter interactions, particularly nonlinear plasmonics.

In the work published in *Plasmonics*, Dr Raymond Ooi and his MSc student, Kai Shuen Tan, studied the effects of plasmonic metallic nanoparticle (MP) and laser control of the optical properties of a quantum system (QS) under a quantum coherence effect. They provided a general framework to describe the local fields that depended nonlinearly on the quantum coherences of the QS and found two values of quantum coherence.

The dielectric function of the QS is computed from the density matrix equations for any interparticle distance, probe laser direction/polarization, and phase and dipole orientation. They found interesting variations of the dielectric function with the laser parameters in the presence of surface plasmon resonance (SPR) in the MP that causes energy level shifts, enhanced long-range Forster interaction and quenching of EIT spectrum. This work explores a new way of controlling the plasmonic effects and manipulating optical properties by using quantum optical technique.

The recently acquired femtosecond laser by Dr Raymond in HIR building would allow expansion of this work into new domains of ultrafast plasmonics and ultrafast spectroscopy and imaging of various nanomaterials and chemicals including biological samples through collaborations with groups in Engineering, Physics, Biology, Chemistry and Medicine.



The Femtosecond Laser.



Visit by UM Vice Chancellor

INTERNATIONAL COLLABORATION BY REGION



Australia

- Australian Antarctic Division
- Monash University, Australia
- Royal Melbourne Institute of Technology, Melbourne, Australia
- The Prince Charles Hospital, Brisbane, Australia
- The University of Adelaide, Australia
- The University of Sydney, Australia
- University of Melbourne, Victoria
- University of New South Wales, Sydney, Australia
- University of Wollongong, Australia

Bangladesh

- Bangladesh University of Engineering and Technology

Canada

- Ryerson University, Canada
- University of Alberta Edmonton, AB Canada
- University of Calgary, Canada
- University of Ottawa, Canada

China

- Chinese University of Hong Kong
- Dalian University of Technology , China
- National Cheng Kung University, Taiwan
- National Taiwan University
- Shanghai Jiao Tong University, Shanghai, China
- The Hong Kong Polytechnic University
- Ocean Park Conservation

Foundation, Hong Kong, China

- University of Kansas,Taiwan
- University Rd, Jinning, Kinmen, Taiwan
- Xiamen University, China

Europe

- Cardiff University, UK
- European Union (EU)
- Imperial College, UK
- Karolinska Institute, Solna, Stockholm, Sweden
- King's London College, UK
- Lancaster University, UK
- Loughborough University, UK
- University College London UK
- University of Birmingham, UK
- University of Cambridge, UK
- University of Edinburgh UK
- University of East Anglia, UK
- University of Kingston, UK
- University of Liverpool, UK
- University of London, UK
- University of Manchester, UK
- University of Newcastle, UK
- University of Oxford, UK
- University of Plymouth UK
- University of Southampton, UK
- University of Southampton, UK
- University of Ulster, UK
- Queen's University Belfast, UK

France

- Université Paris 1 Panthéon-Sorbonne

Indonesia

- Gadjah Mada University, Indonesia
- Mataram University, Indonesia

Iran

- Kharazmi University, Iran
- Razi University, Iran
- University of Tehran, Iran

Japan

- Hiroshima University, Japan
- Hokkaido University, Japan
- Keio University, Japan Kumam University of Tokyo, Japan
- Kyoto University of Education, Japan
- Kyushu University, Japan
- Masanobu Satake, Tohoku University, Japan
- Multimedia University, Japan
- Nagaoka University of Technology, Japan
- RIKEN Center for Genomic Medicine, Japan
- Tohoku University, Japan
- Tokyo Institute of Technology, Japan
- Tokyo Metropolitan University, Japan
- Yamaguchi University, Japan

Korea

- Institute of Science and Technology, Gusong-dong, Yuseong-gu, Korea

Kuwait

- Kuwait University, Kuwait

Singapore

- National University of Singapore, Singapore
- Singapore Immunology Network, A*Star

Thailand

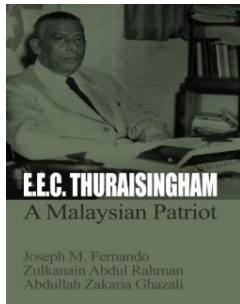
- Mahidol University, Thailand

United Arab Emirates

- University, Al Ain, United Arab Emirates

United States

- Arizona Sate University, USA
- Centers For Disease Control, Atlanta, USA.
- Emory University, Atlanta, USA
- National Institutes of Health, USA
- Origin State University, USA
- University of California, Davis
- University of Miami
- University of Michigan Dearborn, USA
- University of Pittsburgh School of Public Health, USA
- University of South Florida USA
- University of Wisconsin-Madison United States
- University School Of Medicine, USA.
- Wayne State University, USA

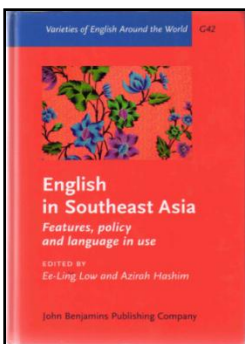


E.E.C Thuraisingham: A Malaysian Patriot

Author : Joseph M. Fernando, Zulkain Abdul Rahman & Abdullah Zakaria Ghazali
 ISBN : 978-983-100-567-5
 Year Publish : 2013
 Page Number : 90
 Publisher : University of Malaya Press

Synopsis:

This book describes the role and influence of Dato' Sir Ernest Emmanuel Clough Thuraisingham in Malaysian politics and society during a formative period. Thuraisingham was a member of the Federal Legislative Council from 1948 and served as the chairman of the influential Communities Liaison Committee and as Member for Education. A close confidante of Dato' Onn Jaafar, Thuraisingham played a leading role with Onn in the formation of the Independence of Malaya Party in 1951 and sought to instill a non-communal approach to Malayan politics. In the post-independence period he served as a Senator. A horse racing enthusiast, Thuraisingham served as chairman of the Selangor Turf Club for 25 years and was active in social welfare activities. His life has received scant attention and this book is intended to document his contributions, political thoughts and ideas.



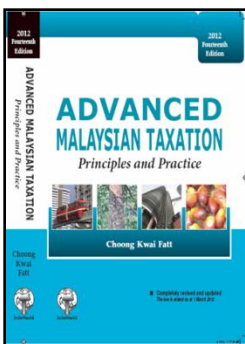
English in Southeast Asia-Features, policy and language in use

Author : Ee-Ling Low and Azirah Hashim
 ISBN : 978-902-728-183-8
 Year Publish : 2012
 Page Number : 394
 Publisher : John Benjamins, Amsterdam

Synopsis:

This volume provides a first systematic, comprehensive account of English in Southeast Asia (SEA) based on current research by leading scholars in the field. The volume first provides a systematic account of the linguistic features across all sub-varieties found within each country. It also has a section dedicated to the historical context and language planning policies to provide a background to understanding the development of the linguistic features covered in Part I and, finally, the vibrancy of the sociolinguistic and pragmatic realities that govern actual language in use in a wide variety of domains such as the law, education, popular culture, electronic media and actual pragmatic encounters are also given due coverage. This volume also includes an extensive bibliography of works on English in SEA, thus providing a useful and valuable resource for language researchers, linguists, classroom educators, policy makers and anyone interested in the topic of English in SEA or World Englishes as a whole.

Advanced Malaysian Taxation – Principles and Practice (14th edition, 2012)



Author : Choong Kwai Fatt
 ISBN : 978-983-9526-65-3
 Year Publish : 2012
 Publisher : Infoworld

Synopsis:

Advanced Malaysian Taxation – Principles and Practice (14th edition, 2012) is the most up-to-date, practical and comprehensive reference on advanced and specialised areas of taxation in Malaysia. Topics covered range from assessability of income to specialised industries (banks, leasing, insurance, shipping and airline), and special organisations. Anti avoidance, field audit, back duty investigation, tax planning for companies, re-organisation, reconstruction and amalgamation of companies and petroleum income tax are also included. The unique research work in this book includes:

- Comprehensive index, tables of law cases and statutes.
- Changes brought in by Finance Act 2012, which contains the 2012 Budget Proposals.
- Cross-reference to gazette orders, Malaysia case law development and IRB practices.
- Tax-planning ideas and suggestions wherever relevant.
- 330 examples and 53 flow charts to illustrate the complex subject of tax.

This book is ideal for tax and legal practitioners, business consultants, accountants, corporate managers and businessmen. It is also a well-known textbook for students pursuing professional examinations in ACCA, MICPA, AIA and local university accounting and business courses. The law is stated as at 1 March 2012.



ORS Marketing Management

Author : Yusniza Kamarulzaman & Nor Khalidah Abu
 ISBN : 978-983-4703-69-1
 Year Publish : 2012
 Publisher : Oxford University Press

Synopsis:

The Oxford Revision Series : Marketing Management summarizes the key concepts and practices of marketing which are essential to understanding this important subject. This revision book provides a succinct exposition of all the main topics in marketing, and is divided into four parts, understanding marketing management, analyzing marketing opportunities, developing and managing the marketing mix and managing current issues in marketing. Chapters covering services management, global marketing, e-marketing, social and ethical strategies have also been included.

Cerpen dan Perpaduan Nasional

Author : Chew Fong Peng
ISBN : 978-983-100-561-3
Year Publish : 2013
Page Number : 211
Publisher : Penerbit Universiti Malaya

Synopsis:

Buku ini meninjau tema perpaduan nasional dan peranan sastra kebangsaan menerusi genre cerpen. Sebanyak 83 buah cerpen dipilih daripada hasil karya Sasterawan Negara, pemenang sayembara cerpen Kementerian Perpaduan dan Pembangunan Masyarakat, cerpen peraduan ESSO-GAPENA, Dewan Bahasa dan Pustaka, Public Bank-Utusan Melayu, Hadiah Pemenang Sastera 1970-an, dan Hadiah Sastera Malaysia 1980-an. Teori Weiner digunakan untuk meninjau 19 tema umum dan khusus perpaduan nasional, berpandukan Teori Pencermian Lukacs. Sastera kebangsaan melalui cerpen memainkan peranan dan sumbangan yang merentasi etnik, jantina dan SES responden. Justeru, buku ini menunjukkan bahawa cerpen mempunyai peranan tertentu dalam membentuk perpaduan nasional.

Tema Baru Penulisan Sejarah

Author : Suffian Mansor, Azharuddin Mohamed Dali & Mardiana Nordin
ISBN : 978-983-100-538-5
Year Publish : 2012
Page Number : 198
Publisher : Penerbit Universiti Malaya

Synopsis:

Buku ini bertujuan memberi dorongan dan pendedahan bahawa penulisan sejarah bukanlah bersifat kaku dan tertumpu kepada aspek tertentu sahaja. Penulisan tradisional dahulu, menekankan hanya bukti tertulis sahaja dikatakan sejarah dan tumpuan lebih kepada kajian terhadap politik. Oleh itu kajian sosial atau ekonomi dalam penulisan sejarah amat terhad. Namun pada masa kini corak dan pola penulisan sejarah sudah berubah berkaitan sejarah manusia dengan pandangan lebih menyeluruh. Ini membuktikan bahawa kajian dan penulisan sejarah adalah bersifat dinamik serta mempunyai ruang untuk menyelongkar isu dan tema baru. Dalam masa sama, kaedah dan sumber yang digunakan turut divariasikan dengan memanfaatkan sumber lisan, visual dan pelbagai disiplin ilmu lain. Usaha dijalankan itu memperkukuh lagi pengajaran dan pemahaman dalam bidang sejarah. Inilah yang diketengahkan melalui buku ini dengan merangkumi tema baru penulisan sejarah.

Meneroka Penterjemahan Bahasa Melayu

Author : Puteri Roslina Abdul Wahid
ISBN : 978-983-100-557-6
Year Publish : 2012
Page Number : 204
Publisher : Penerbit Universiti Malaya

Synopsis:

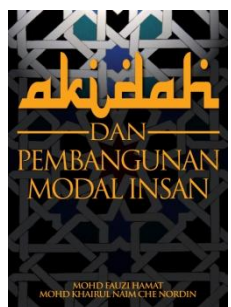
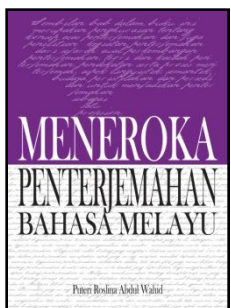
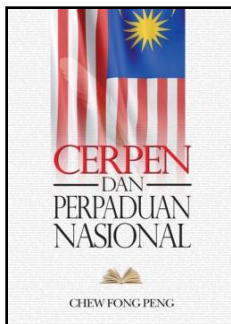
Buku ini ditulis untuk mereka yang ingin menceburi bidang penterjemahan dan mendapat pengetahuan tentang aspek-aspek penting dalam dunia penterjemahan khususnya terjemahan daripada bahasa Inggeris ke dalam bahasa Melayu. Buku ini dapat dijadikan panduan kepada mereka yang ingin menceburi dunia penterjemahan bahasa Melayu. Sembilan bab dalam buku ini merupakan penghuraian tentang konsep asas penterjemahan dan juga penelitian kegiatan penterjemahan dari sejarah awal perkembangan penterjemahan, teori dan kaedah penterjemahan, pendekatan serta proses menterjemah, aspek linguistik, semantik, budaya, peristilahan dan persediaan untuk menjadikan penterjemahan sebagai satu profesion.

Akidah dan Pembangunan Modal Insan

Author : Mohd Fauzi Hamat, Mohd Khairul Naim Che Nordin
ISBN : 978-983-100-560-6
Year Publish : 2012
Page Number : 254
Publisher : Penerbit Universiti Malaya

Synopsis:

Buku ini memfokuskan perbincangan kepada prinsip akidah yang terkandung dalam rukun iman dan hubungannya dengan tema pembangunan modal insan. Selain daripada mengetengahkan perbezaan konsep pembangunan modal insan menurut perspektif Barat dan Islam yang menatijahkan kesan berbeza, ia turut memberi penekanan dari aspek pengaruh keyakinan terhadap prinsip-prinsip rukun iman dalam pembangunan ilmu dan akhlak modal insan yang dipertanggungjawabkan sebagai khalifah di bumi. Buku ini sesuai dibaca oleh semua pihak yang terlibat dalam bidang pendidikan, perancangan dasar pembangunan, khususnya pembangunan karakter dan pelaksana polisi pembangunan sosial, penjawat awam dan pekerja swasta, pensyarah, guru, mahasiswa, pelajar dan masyarakat awam. Penyampaian buku dipersembahkan dalam gaya bahasa yang mudah agar kandungannya mudah difahami dan dihayati.



Marketing ideas from the lab

Excerpts-The Star-Sunday March 31, 2013

Academics must change their mindset if they are serious about taking their innovations out of the ivory towers.

Dr Noor Azizi and his team of researchers have managed to secure a RM500,000 grant from the Malaysian Technology Development Corporation recently to develop the prototype of a **Lathe Machine**.

The group has also picked up an award for the invention of an automatic thermocyclic dipping machine at the Innovation Night Ceremony.

"During the last couple of years, there has been a strong push from the ministry to train the academics to be more business minded," says Dr Noor Azizi who has attended several of the workshops organised by the ministry.

Based on his experience, he shares that the different aspects of running a business such as marketing and business pitching can be a different ballgame for the academics.

"Academics definitely need to change their mindsets before they can become entrepreneurs. Business is moving at a different pace whereas the academic world is more relaxed.

"Before, we may not be very concerned

about issues such as cost and staff management, so this is why academics have to start looking at things from a different perspective now," says Dr Noor Azizi.

Meeting market needs

Entrepreneurs often have the opportunity to strike it big when they are able to predict changing consumer demand.

Prof Dr Muhamad Zakaria, the leading researcher of Getrid, a homegrown biopesticide brand, says the product was developed based on the rising concern over the harmful effects of pesticides to health and the environment.

"The main component of the biopesticide is an active substance derived from *gelam* trees, *Melaleuca leucadendron*.

Compared to other major brands in the market, it is non-toxic and even safe to be sprayed on food items," says Prof Muhamad who is based at UM's Faculty of Science.

Currently, the range of Getrid products including insect repellent spray, termite spray, pet shampoo and anti-dandruff shampoo can be found in major supermarkets.

The award-winning products at the ceremony are produced and marketed by a spin-off company under UM Capital Bhd, a UM investment arm in promoting innovation and commercialisation of

research.

"We are looking to launch a pet shampoo for ticks in the near future to tap into the huge potential in the growing number of pet lovers in the country," says Prof Muhamad.

He however admits that sales was not very encouraging when Getrid was first introduced to the market as it was tough to compete with the established brands.

"Sales have picked up gradually as the consumers are becoming more educated and aware about the benefits of buying a green product. Now we are hoping to secure more funding to continue the R&D of environmental sustainable innovations," says Prof Muhamad.

>>>>full news please visit

<http://thestar.com.my/education/story.asp?file=/2013/3/31/education/12870885&sec=education>



Innovative academic: Dr Noor Azizi receiving the award in recognition for his contribution to research at the ceremony from Ab Rahim.

Going all out for research

Excerpts-The Star-Sunday January 13, 2013



Everybody, follow me: One of the robots at UM's Advanced Robotics Lab does tai chi!

Universiti Malaya continues its strong tradition in R&D by looking at various types of research that could benefit society.

Research and development (R&D) is an integral part of any university.

As one of the country's five research universities, Universiti Malaya (UM) has a strong tradition in R&D. To ensure research activities are more efficient, they are organised into eight clusters. The clusters are Sustainability Sciences; Health and Translational Medicine; Biotechnology and Bioproducts;

Advanced Fundamental Research; ICT and Computational Sciences; Advanced Engineering and Technology; Social and Behavioural Sciences; and Humanities and Ethics.

From the potential of having robots as carers for the elderly to hoping to generate greater commercial success for the Malaysian Giant Freshwater Prawn, it is obvious that UM researchers are engaged in a range of R&D activities.

UM deputy vice-chancellor (Research and Innovation) Prof Dr Awang Bulgiba Awang Mahmud says the university is supportive of research that is carried out by its staff.

Robot as carer

The research into how robots could be used to monitor an elderly person who may be home alone while other family members are working, is being carried out by Prof Dr Loo Chu Kiong from UM's Department of Artificial Intelligence and his team.

"Based on reports in the media, we learnt that Malaysia is likely

to become an ageing society by 2035.



Elderly aid: Prof Loo pointing out that Aware can be fitted with different gadgets to help keep an eye on an elderly person who is home alone.

"Our research is based on how a robot or what we refer to as an 'aged wellness augmented by robot enabler' (Aware) is able to monitor an elderly person who is home alone.

"Depending on how it's programmed, there could be cameras at certain angles within the robot which could alert the elderly person's family member if she has suffered a fall or has missed taking medication," he says.

As an example, a camera which

is placed at a lower angle might register that the elderly person has fallen down — it can then alert a family member or emergency services.

"Such a robot would help ensure safety and a timely response in cases of emergency," he says. Prof Loo explains that not all robots would be used in the care of the elderly as "edutainment robots" are used for entertainment too. "Darwin the robot (on the cover of the pullout) can kick a ball, and can entertain both adults and children," he adds.

>>>>full news please visit <http://thestar.com.my/education/story.asp?file=/2013/1/13/education/12544730&sec=education>

"If you want to do well, you have to aim high if you don't want to miss the target. Aim for the stars and you may hit the moon but if you aim for the moon then you may hit the trees," Prof Dr. Awang Bulgiba.

Research Support Unit

Research Support Unit previously known as Scholarly Publication Support Unit (SchoPuS) was established on 4th February 2009 under the portfolio of Deputy Vice Chancellor (Research & Innovation) of the University of Malaya. This establishment was intended to reinforce the academic credibility of the university by a higher number of international publications.

Objectives:-

- To increase the number of submissions by academic staff and postgraduate students of the University of Malaya to ISI/WoS-indexed journals
- To increase the chances of acceptance of articles submitted to ISI/WoS-indexed journals by the academic staff and postgraduate students of the University of Malaya
- To increase the chances of journals produced by the UM academic community to be placed internationally indexed database

ACTIVITIES :

1) EDUCATING

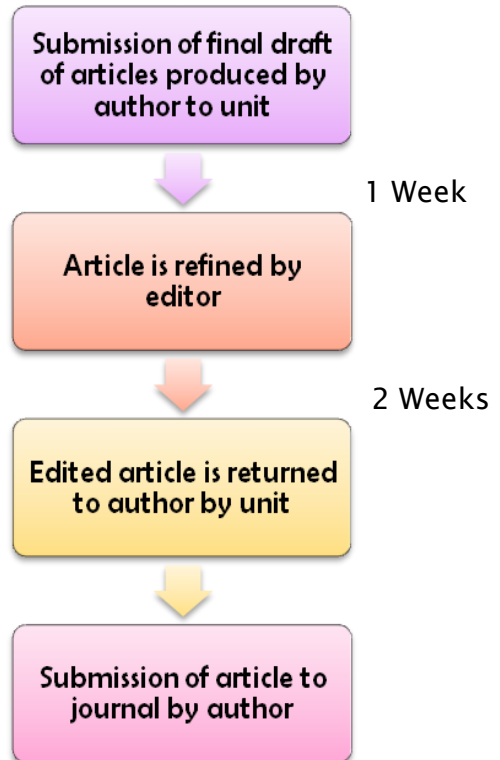
- Inviting prominent scholars to give lectures on writing and publishing
- Conducting intensive courses on writing and publishing
- Organizing group sessions on writing and producing articles for ISI/WoS-indexed journals
- One-to-one tutorials with authors to help improve/align their draft to meet publication requirements of ISI/WoS-indexed journals

2) EDITING

- Editing the final draft of articles-double spaced in 12-point font and sent to uspi@um.edu.my
- Every edited paper incurs charges to the author

3) STATISTICAL SERVICES & TRAINING (in pipeline)

FLOW CHART FOR EDITING ARTICLES



Contact

RESEARCH SUPPORT UNIT (RSU)
 Centre of Research Services
 Level 2, Research Management & Innovation Complex
 University of Malaya
 50603 Kuala Lumpur,
 Malaysia
 Tel : 603-7967 7812 / 7355
 Fax: 603-7967 7354
 Email: uspi@um.edu.my

OPEN ACCESS JOURNALS

By: Janaki Sinnasamy, Koh Ai Peng
University of Malaya Library

Researchers and academics have recently been inundated with emails inviting them to submit papers in online/open access journals. While it is only natural to feel flattered, it is advisable to examine the status of these journals before committing to submit your articles. The call can come from websites, magazines and companies with a promise to showcase research. Most of the time, authors are asked to pay for submission of their articles as one of the ways to promote research.

The rule of the thumb is to verify if the journal inviting researchers to submit article, is listed in the Directory of Open Access Journals (DOAJ). DOAJ is a comprehensive directory of Open Access Journals. It was founded in 2003 by Lars Bjornshauge, Director of Libraries at Lund University from 2001 to 2003. The aim is to increase the visibility and ease of use of open access scientific and scholarly journals, thereby promoting their increased usage and impact (www.doaj.org). It was initially supported by the Open Society Institute (OSI). About 8,782 journal titles are included in DOAJ (as of March 2013). However, there are open access journals which are not included or indexed in DOAJ.

Basically, there are two distinct ways for scholarly articles to become available open access, either directly provided by the journal publisher (gold open access), or indirectly by being uploaded and made freely available on the Web (green open access) (Laakso & Bjork, 2012). Articles submitted for open access have gained much popularity across disciplines. Table 1 shows the number of open access articles across major disciplines for the year 2011 (Laakso & Bjork, 2012).

DISCIPLINES	Biomedical	Social Sciences & Humanities	Earth & Environmental Science	Engineering	Physics & Astronomy	Chemistry & Chemical Engineering	General Science	Mathematics
Number of articles	120,900	56,000	54,900	37,500	16,000	12,700	12,700	7,200

Table 1: Open access articles across disciplines for year 2011

Do journal titles in DOAJ have impact factor?

This issue seems pertinent for researchers and academics as it facilitates fulfilment of the requirement for their publications whilst achieving open access to their work. In 2004, there were 239 OA journals for JCR 2004, which increased to 295 for JCR 2005, a further rise to 385 OA journals for JCR 2008. In JCR 2009, a total of 619 OA journals were represented (Impact, 2011). Table 2 shows the increase in the percentage of open access journals included in Thomson Reuters Web of Knowledge (WoK) from 2003 to 2010.

Year	2003	2006	2008	2010
Open Access Journals in Thomson ReutersWoK	2.9%	19.4%	20.6%	23.1%

Table 2: Open Access Journals in Thomson Reuters Web of Knowledge

Predatory Open Access Publishers

These are publishers and websites resembling scholarly publishers but are actually out to prey on unsuspecting academics. Very often, academics, researchers and authors are invited to submit articles and papers and are charged a processing fee. Exploring their websites, however, can uncover a number of issues such as: no links to the articles, no previous or current issues available, editorial team from a wide range of countries from east to west, very little information on how to contact them. The websites are usually very colourful and glossy in appearance. Their range of journal titles includes almost all disciplines.

One of the largest obscure scholarly open-access publishers reported is *Academic and Scientific Publishing* which publishes about 355 open access journals. Others include *Elite Research Journals*, *SciKnow*, *Scholarly Journals* and many more mushrooming. The latest incident reported involves two Bosnian journals. The journals titled *HealthMed* and *TTEM* are published by an organization named DRUNPP (Sipka, 2012). These journals were accepted into ISI Thomson Reuters. Due to high self-citations, mutual citations exchange and citations delivered by Serbian authors, *HealthMed* has been withdrawn from ISI Thomson Reuters (information obtained until March 2013).

The Malaysia Ministry of Higher Education has been very alert to such unscrupulous publishers and web masters. So far, four online publishers found to be suspicious have been dropped from their list of journals recognized. The implication is that papers from these journals will not be considered as University research output for MyRA (Malaysia Research Assessment Instrument) data. The publishers are: *Academic Journals*, *European Journal Publishing* (Euro Journal), *CG Publishing* (Common Ground Publishing) and *African World Press*.

Blogs with information on Open Access Publishers

Kent Anderson and Phil Davis maintain the *Scholarly Kitchen* blog (<http://scholarlykitchen.sspnet.org/>) established by the Society for Scholarly Publishing (<http://www.sspnet.org>) since 2008. It is a moderated and independent blog and opinions are those of the authors and not necessarily those held by the society. Another blog, *Vow! Wouter on the Web* (<http://wowter.net/about>) is written and maintained by Wouter Gerritsma, subject librarian and bibliometrician at Wageningen UR Library. The blog includes information on bibliometrics, publication strategy, University rankings, and Open access.

One of the most useful blog for researchers and authors is the *Scholarly Open Access: Critical Analysis of Scholarly Open-access Publishing* (<http://scholarlyoa.com>) maintained by Jeffrey Beall. Information on misty and misleading publishers and websites are discussed. Early 2012, Jeffrey Beall released a long list of potential, possible, or probable predatory scholarly open-access publishers (<http://scholarlyoa.com/?s=beall+list>). There may be differences in opinions among researchers with regards to the list.

However, it is a dynamic blog which also invites feedback and comments from researchers. Some other examples of fraudulent companies and websites reported (<http://scholarlyoa.com>) include: *International Innovation*, *Environment Progress*, *Earth Emphasis* and *Psychology Progress* and many more.

The websites given in this paper will be useful for authors to verify information before deciding to submit articles to open access publishers.

Reference

- Impact factor of open access journals (2011). Retrieved January 6, 2011 from <http://wowter.net/2011/01/06/the-impact-factor-of-open-access-journals> Laakso, M., & Bjork, B. C. (2012). Anatomy of open access publishing: A study of longitudinal development and internal structure. *BMC Medicine*, 10: 124. Available at www.biomedcentral.com/1714-7015/10/124
- Šipka, P. (2012). Legitimacy of citations in predatory publishing: The case of proliferation of papers by Serbian authors in two Bosnian WoS-indexed journals. *CEES Occasional Paper Series*, No. 2012-12-2. Retrieved from <http://www.ceon.rs/ops/12122>

Publishing Referred Journals: Tip and Pitfalls

By: Dr. Nicholas J. White
Liverpool John Moores University, UK

In the UK, the demands of the Research Excellence Framework – a periodic review and rating of research outputs – entails increasing pressure to publish in the top-ranking, peer-reviewed journals; and there are similar pressures amongst academics throughout the world. This article is not supposed to be a comprehensive guide, but shares some of my experiences of publishing in History and Area Studies journals, which hopefully are applicable to academia more widely.

It is probably worth beginning by reconsidering what makes a good journal article and always bearing these points in mind when writing and submitting material for publication. A good journal article is not unlike a good dissertation or thesis but usually shorter in length. Hence, its defining feature should be *originality*, its original contribution to knowledge. In History, and other Arts & Humanities subjects, this also usually means being based upon primary sources/data or constituting a synthesis of secondary material with an *original* argument. Moreover, the argument and evidence should challenge or modify existing historiography and/or paradigms and theories. To get these ideas across, however, will also require a clear written style and for the paper to be well structured with a high-level of sustained argument and analysis.

But within that framework articles differ immensely, there is no 'one size' that 'fits all'. Hence, picking the right journal is often the most important aspect of a successful publishing strategy. It becomes crucial to 'know your journal'. Has the journal published similar material in terms of style and content before? Does the journal mainly publish material based on primary research or on the synthesis of secondary literature? *Modern Asian Studies* has proved a particular favourite of mine because it specialises in longer monographic-type essays, which suit my mode of research and writing. But that does not necessarily suit all. Is the journal multi-disciplinary or exclusively focused on one discipline?

It is also well worth investigating who sits on the editorial board of the journal. Journals often like to keep things 'in house', so this is worth considering because a member of the board may well end up reviewing your article. You do not necessarily want an academic reviewing your material who is inherently hostile to your approach or who you have heavily criticised. (Although this is not necessarily fatal since reviews are usually asked for from more than one scholar). If there is more than one editor of a journal, it might be worth sending your paper to the editor more likely to be sympathetic to your approach or style or argument.

Once you have selected the most appropriate journal, it is most important that you follow the guidelines in your submission – these can usually be found at the back of hard copies of the volumes and usually on the websites of the journals in question as well. Guidelines vary immensely. It is important that you do not ignore these since an editor will instinctively visualise the piece you have submitted as a finished, published article. Never exceed the word limit. Limits vary from journal to journal. Remember journals have hundreds of applications per year: a very easy way of rejecting material therefore is if it is too lengthy. You will then return to the end of the queue because you will have to resubmit before the journal will even consider looking at your paper. In other words, do not annoy the editor or the referees by not complying with the guidelines.

This underlines the importance of good presentation (e.g. the *Journal of Southeast Asian Studies* insists upon double-spacing and 12 point font) and clear written English. Remember that referees are incredibly busy people, asked to review at short notice without payment and in the midst of teaching, marking, administration and all the other demanding things required in contemporary academia. It is most important therefore to make the task of reviewing and editing easy, and not to irritate editors and referees with sloppy presentation or English. Make sure, for example, that you include an abstract if it is asked for, and that you present tables and figures in the manner specified, and that copyright clearance for reproduction of images etc. has been obtained.

In particular, make sure that you comply with the referencing style as specified – indeed, ignore this at your peril. Referencing styles vary considerably from journal to journal. Do not assume that your preferred style is the journal's preferred style.

Once you have submitted your paper for consideration, the next step will be responding to referees' reports. Here patience is a virtue – there is usually a specified time of two to three months in which reports will be sent back to you.

It may take longer since, as we have already noted, reviewers are incredibly busy and finding reviewers who submit on time is often very difficult for editors, particularly, of course, in very specialised research areas and disciplines. You can usually expect 2-3 reviews; the thinking being that if, for example, one is negative, and does not recommend publication, but the other two are positive, and recommend publication, the editor will follow the majority decision.

Reports from referees vary immensely from a few lines to a couple of pages. Some journals now have templates, some of which have to be filled in electronically online and which are quite prescriptive. Others still rely on an essay-style response. Usually, however, referees are asked to give a rating from reject to accept. But acceptance is often qualified or conditional upon revisions along the lines suggested by referees. You should always try and meet these requirements because if a number of revisions are required the same referees will be asked to look at the paper again. If you have not done what is asked this is also likely to be a source of great annoyance to an angry and overstretched don! Even so, it is worth bearing in mind that one does not have to respond to the suggested revisions if they seem unreasonable. The best piece of advice I ever had, from a colleague, was to write back to the editor where the demands seemed impossible to meet – they would have required another year of research and the writing of a manuscript which would have constituted a full-length monograph. So, I wrote back to the editor and put my case, where I responded to most of the criticisms but not them all. The editor accepted my argument and the said article is now my most cited publication. But if the article is rejected outright it is not uncommon these days for the journal to supply zero feedback and to not accept a resubmission. This emphasises the importance of getting the basics right in the first place. Given the frustrations of the academic publishing game, the risk and the patience involved, there might be an inclination to submit your article to more than one journal at the same time. Never do this – it is considered extremely bad form and you will get yourself a reputation for foul play.

Finally, a word about the importance of proof-reading. Once your paper is accepted for publication as a journal article, this is not the end of the story, since you will also have to meet the deadlines for proofs. It is important that you both meet these deadlines – which can often be a matter of a few days – and to make sure that you check proofs very carefully.

You will be surprised by how many errors creep in, through editors and copy editors tinkering with your text. Indeed, this emphasises the importance of getting the final submission right first time. Your final submission is expected to be *the final* version – do not annoy editors by trying to change masses of text at proof-reading stage. They probably will not allow this anyway, beyond genuine mistakes made at copy editing stage.

Publishing refereed articles can be a laborious and often frustrating business. But, hopefully, the satisfaction you will gain from having your work in print for posterity, and to be widely cited and to stand the academic test of time, makes it all worthwhile.

Note

This paper was first presented at the Universiti Malaya History Seminar, 2 July 2012. The author would like to thank participants at the seminar for the lively and informative discussion which followed his presentation. In particular, he would like to thank Dr. Shakila Yacob for organising the seminar.

Biography

Nicholas J. White is Reader in Imperial & Commonwealth History at Liverpool John Moores University, UK. His books include *Business, Government and the end of empire: Malaya, 1942-57* (Kuala Lumpur: Oxford University Press, 1996); *Decolonisation: the British experience since 1945* (Harlow: Longman, 1999; 2nd edition in preparation); *British Business in Post-Colonial Malaysia, 1957-70* (London and New York: Routledge, 2004). He has also published in a number of journals, mainly on Malaysian economic and business history but also on wider topics in British decolonisation: *Journal of Imperial & Commonwealth History* (1994); *Journal of Southeast Asian Studies* (1997); *South East Asia Research* (1998); *Modern Asian Studies* (1998; 2004; 2010 [with Shakila Yacob]; 2012); *Economic History Review* (2000); *Asia Pacific Business Review* (2001); *Twentieth Century British History* (2003); *Indonesia and the Malay World* (2008); *Past & Present* (2011); *History* (2011). He has served on the international advisory board of the *Journal of Imperial and Commonwealth History* since 2006, and has refereed for a number of journals. He has additionally edited two collections of essays – *The Empire in One City? Liverpool's Inconvenient Imperial Past* (2008; with Sherrylynne Haggerty and Anthony Webster) and *The International Order of Asia in the 1930s and 1950s* (2010; with Shigeru Akita).

UM CENTRE OF INNOVATION & COMERCIALIZATION: UM INNOVATION INCUBATOR

The UM Innovation Incubator managed by UMCIC was launched by the Minister of Higher Education April 2012 in conjunction with University of Malaya Research Conference 2012 (UMRC 2012) and the opening of the new Research Management & Innovation Complex (RMIC). UM Innovation Incubator is a new incubation hub for discovery, innovation and commercialization.

The development will be in two phases, the first Phase is located at Level 5, UMRC and offers unique working environment, business incubation support, infrastructure and shared facilities to all tenants. UMCIC also provides business mentorship opportunities and cross-disciplinary collaborations for academic members and students developing early-stage enterprises and spin-off companies. The second phase with 3 stories building can accommodate more than 25 incubators. This project now is under JKR finalisation and expected to be ready in 2015.

Amongst the current tenants at the incubator are the Gyrus Tech Sdn Bhd (Biopro Diesel), Centre of Advanced Manufacturing and Material Processing (AMMP), Semio Technology Sdn Bhd (Mosquito Coil: Fatal Attraction), Specscan Sdn Bhd (Energy Storage Devices for advanced applications) and Integrated Transportation Solutions Sdn Bhd (Traffic Data System). Tenants of UM Innovation Incubator will benefit from the connections they can make with other researchers/inventors at the incubators which includes industry players and external collaborators. There are still a few incubator suites available on first-come-first serve at RM200 per month rental. For futher information, please feel free to contact UMCIC office at 03-7967 7022 ext 2313/7351



IPPP RESEARCH LAB FACILITIES

NO	FACILITIES	MODEL	RATE (RM)			
			UM User		Non-UM User	
1	Nuclear Magnetic Resonance (NMR)	Jeol Jnm-gsx 270	30.00		60.00	
2	SEM (Sample Preparation)		30.00 (Material sample) 50.00 (Biological Sample)		60.00 (Material sample) 100.00 (Biological Sample)	
3	GCMS	Agilent Technologies	25.00/sample		50.00/sample	
			500.00/year*			
4	Confocal Laser Microscope	Leica Tcs Sp5 li	60.00/hour		100.00/hour	
			500.00/year*			
5	Field Emission Scanning Electron Microscope (FESEM)	Quanta FEG 450, EDX-OXFORD	High/ Low Vacuum	ESEM/WetStem	High/ Low Vacuum	ESEM/WetStem
			180.00/sample (max 5 images)	250.00/sample (max 5 images)	360.00/sample (max 5 images)	500.00/sample (max 5 images)
			EDX	EDX	EDX	EDX
			Elemental: 100.00/sample	Elemental: 100.00/sample	Elemental: 200.00/sample	Elemental: 200.00/sample
			Mapping: 100.00/sample	Mapping: 100.00/sample	Mapping: 200.00/sample	Mapping: 200.00/sample
6	Surface Area Analyzer (BET)	Micromeritics ASAP2020, TRISTAR II 3020 Kr	150.00/sample		300.00/sample	
7	Differential Scanning Calorimeter (DSC)	Perkin Elmer (Dsc-8000)	150.00/sample		300.00/sample	
8	Simultaneous Thermal Analyzer (STA)	Perkin Elmer (Sta 6000)	150.00/sample		300.00/sample	
9	Particle Image Velocimetry (PIV)	Dantec Dynamics Nano L135-15piv	From 50.00/experiment (Depend on experiment requirement)		From 100.00/experiment (Depend on experiment requirement)	
10	DNA Sequencer	Applied Biosystems (3730xl DNA Analyzer)	12.00/reaction		24.00/reaction	
11	Real Time PCR	Applied Biosystems Quantstudio (12k Flex Real Time PCR System)	30.00/hour		60.00/hour	
12	Dynamic Mechanical Analyzer	Perkin Elmer	100.00/sample		200.00/sample	

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